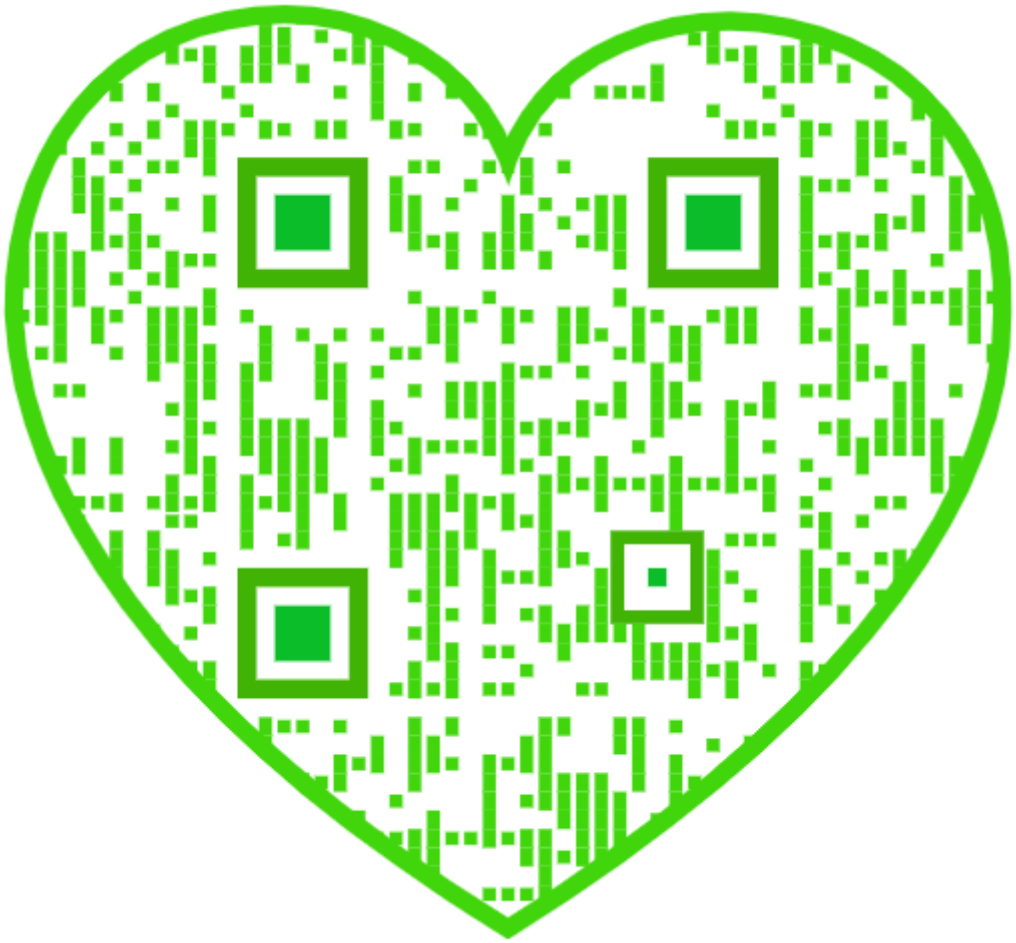

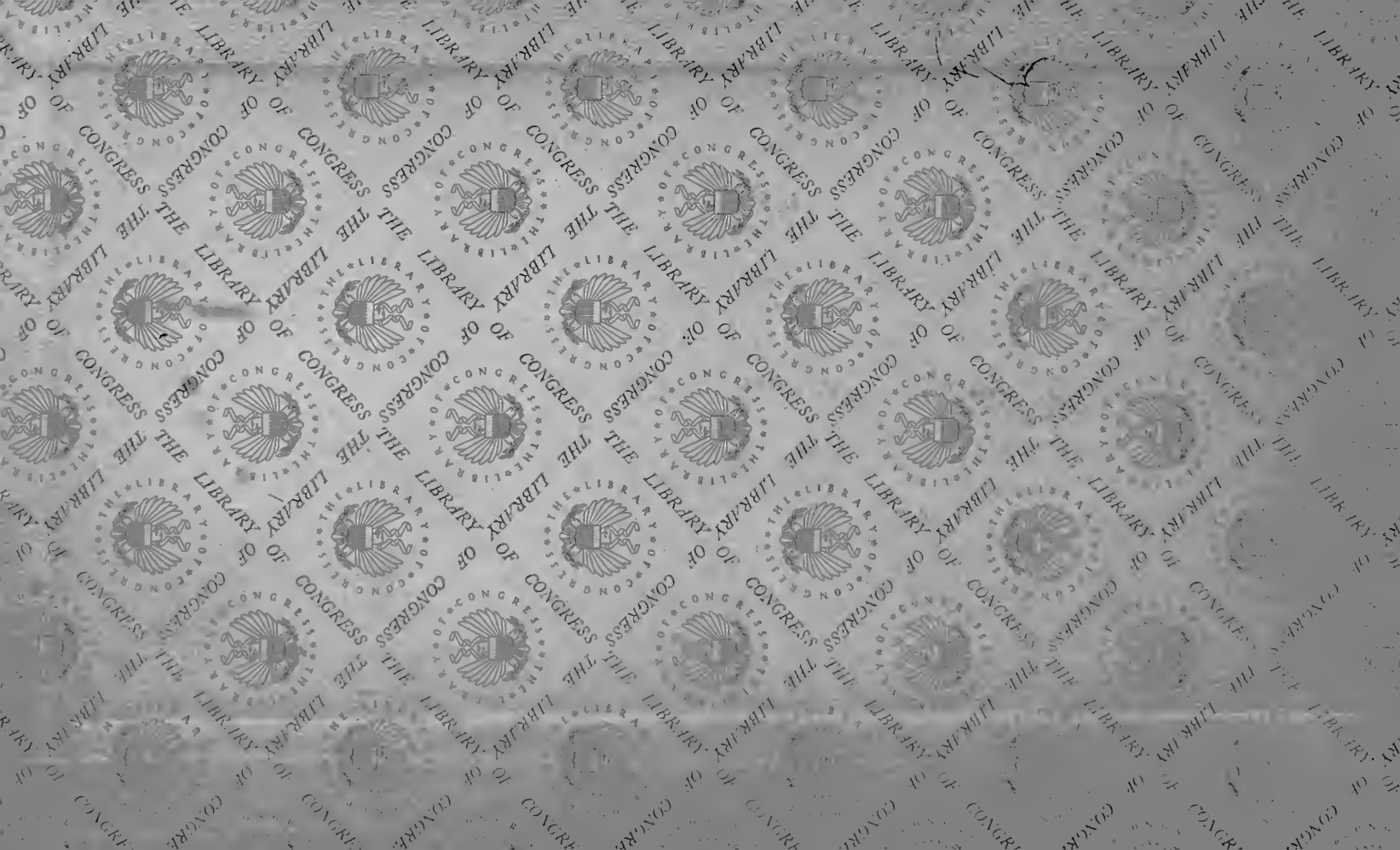

MAGNER'S

ART OF

Taming ✵ and ✵ Educating ✵ Horses.

THE

ART OF TAMING AND EDUCATING

THE HORSE:

A SYSTEM THAT MAKES EASY AND PRACTICAL THE SUBJECTION OF WILD AND VICIOUS HORSES, HERETOFORE PRACTICED AND TAUGHT BY THE AUTHOR AS A SECRET, AND NEVER BEFORE PUBLISHED; INDORSED BY LEADING CITIZENS AND COMMITTEES OF EXPERTS IN THE PRINCIPAL CITIES AND TOWNS OF THE UNITED STATES AS UNQUALIFIEDLY

THE SIMPLEST, MOST HUMANE AND EFFECTIVE IN THE WORLD;

WITH

Details of Management in the Subjection of over

FORTY REPRESENTATIVE VICIOUS HORSES,

AND

The Story of the Author's Personal Experience;

TOGETHER WITH CHAPTERS ON

FEEDING, STABLING, SHOEING, AND THE PRACTICAL TREATMENT FOR SICKNESS, LAMENESS, etc., WITH A LARGE NUMBER OF RECIPES HERETOFORE SOLD AS GREAT SECRETS.

900 ILLUSTRATIONS.

BY D. MAGNER,

Assisted in the Medical Department by JAMES HAMILL, D. V. S., formerly Lecturer on Shoeing and Disease of the Foot, in Columbia Veterinary College, N. Y.; CHAS. A. MEYER, D. V. S., New York; JOHN McLAUGHLIN, D. V. S., State (New Jersey) Veterinary Inspector for the Board of Health; B. C. McBETH, Vet. Surgeon, Battle Creek, Mich.

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D. MAGNER,
Battle Creek, Mich.

(See also page 1081.)

PREFACE.*

THERE are eleven million horses in the United States, and not one man in a million who knows how to educate them to the highest degree of usefulness. We say *educate;* for the horse is an animal of high and spirited organization, endowed by his Creator with capabilities and faculties which sufficiently resemble man's to come under the same general law of education and government. Primarily, the word educate means to *lead out* or *lead up;* and it is by this process of *leading out* and *leading up* a child's faculties that the child becomes a useful man, and it is by a like process that a colt becomes a useful horse. Now teachers, like poets, are born, not made. Only a few are gifted to see into and see through any form of highly organized life, discern its capacities, note the interior tendencies which produce habits, and discover the method of developing the innate forces until they reach their noblest expression, and then apply the true and sufficient guidance and government. The few who have this gift are teachers indeed, and, next to the mothers of the world, deserve the world's applause as foremost among its benefactors.

Next to child training and government comes horse training and government; and which is the least understood, it were hard to say. Boys and colts, so much alike in friskiness and stubbornness, both are misunderstood and abused in equal ratio. The boys are shaken and whipped, and colts are yanked, kicked, and pounded. That high-spirited or slow-witted boys become good men, and high-

* This preface was written by a gentleman well known in the world of letters, and especially famous, not only as a lover of fine horses, but as a high authority on all matters concerning them. Learning that I had in preparation a new work, he volunteered to write the preface, which is here given as a concise introduction to the author's own labors, with a high appreciation of the compliment paid him by the distinguished writer, in the personal allusion, the publication of which demands no apology when its high source is considered.

spirited or dull colts make serviceable horses, I conceive is due to the grace of God more than to man's agency,—that fine grace, I mean, spread abroad through and existing in all His creatures, which operates in regenerating continually, making the good better, preventing those whose circumstances forbid their becoming good from becoming absolutely bad.

The author of this book is known to me as one of the gifted ones of the earth, because he is gifted to discern the nature of animals, and educate them for man's service. The possession of this gift suggested his mission, and well has he followed it, and by it been educated himself to a degree rarely, if ever, attained by man before. I doubt if there be on the globe his equal in knowledge as to the best method of training horses. Through this volume he seeks to give the public the benefit of his experience. I bespeak for it the careful perusal of the curious, and of those especially whose judgment and heart alike prompt them to seek for and promulgate knowledge, which, being popularized, would make the people more humane and horses more serviceable.

W. H. H. M.

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There are also three patents covering important methods of subjection and treatment given in this book. First, a simple means of subjection by which any horse, however vicious, balky, or unmanageable, can be put in harness, subdued, and driven gently without danger of accident. Second, a method by which headstrong, lunging, runaway horses can be controlled directly, and so subdued by the pressure of the reins upon the nerve centers, that he will soon submit to the ordinary restraint of the bit. Third, a method of preventing and curing contraction and quarter-crack—an absolute cure for quarter-crack, with freedom to drive on any road as desired, without causing the hoof to split back as it grows—guaranteed a means of perfect cure. Fourth, (patent pending,) a method by which most pulling, lugging horses on the bit will drive safely and easily to a pleasant and easy restraint of the reins.

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The Work Proper and Index,	1069	"
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INTRODUCTION.

The horse is the most indispensable and valuable of all the animals used by man. Nearly all the avocations and many of the recreations of every-day life, are largely dependent on the use of horses. When treated intelligently and properly, the horse is the most tractable and serviceable of all the domestic animals; but if treated ignorantly or badly, he is liable to become so vicious and unmanageable as to be comparatively if not wholly worthless.

While there is no lack of information and accepted authority on breeding, stabling, shoeing, driving, color, etc., etc., as pertaining to horses, there is a singular lack of authority, or even intelligent understanding, on the art of arts, namely, that of teaching, subduing, and changing the character of wild or vicious horses, as desired. In fact, there is no book or other authority on the subject, it being practically a new science, the principles of which have but recently become understood, as developed by the author of this work.

There is no subject more of a mystery, even to the most intelligent, or about the successful performance of which there is more incredulity or misconception. It is supposed that if a horse is courageous and strong, and becomes vicious or resists control, the fault must be wholly in an incorrigibly bad temper, that makes his successful management impossible; whereas a proper understanding of the subject shows that the animal's condition is the result of ignorant, bad treatment, and which kind, intelligent treatment would entirely prevent or overcome; and that in consequence, a large proportion of the best horses by

nature have fastened upon them habits that make them practically unsafe and worthless for use. Then by the present system, proved to be so defective and injurious, it is the work not unfrequently of months and years to break colts to drive; and even after this great expenditure of time and effort, many of the best horses are ruined; so that the loss to the people of the country both from the depreciation of value, accidents, and loss of time, is in the aggregate enormous.

One horse kicks; a second balks; a third pulls against the bit and runs away despite the efforts of several men to hold him; a fourth will not stand while persons are getting into or out of a carriage; another is liable to kick the blacksmith over when he tries to take up or hold his foot for shoeing, compelling, in many cases, the necessity of roping the horse down on his side to be shod; another is liable to kick any person coming within reach of his heels; the next is perhaps all right until he catches the rein under his tail—which he is sure to do—when he is liable to kick or run away; while, perhaps, the next will try to pull loose or break his neck when hitched by a halter or bridle; another fears a baby-wagon, stone, stump, dog, white cow, umbrella, robe, train of cars, or something else. One horse will not stand; another will not back; another will pull away when led by the halter; another lugs on the bit, or pulls on one rein. One horse will not work double, another will not work single; and so on to the end of the catalogue of vices to which horses are subject. These, with many other vices or habits that could be mentioned, are the cause not only of great pecuniary loss, but of personal injury, if not destruction of life, throughout the country, which, when fully realized, is fearful to contemplate. What city, village, or neighborhood is there that has not almost daily disastrous accidents resulting

from the use of horses? And how many horses of spirit do we find that do not have some one or more of these habits that have been mentioned?

Now if we can prevent or overcome all this without abuse or accident, saving at least nineteen twentieths of the time employed in breaking them, and give assurance of their entire subjection and safety, it is certainly deserving of being ranked among the most important features of benevolence and economy to the people of the country.

There have not been wanting at different times many who have pretended to be able to tame and control horses of the most vicious character, but upon investigation it has proved that their success was based upon a very slender knowledge of the art. Whatever has been my own success, it is a slow growth, the result of long-continued observation and experimenting, following up every apparent or real clue that promised success, until I learned how to act directly upon the horse's brain, and to influence it as desired. My progress at first was very slow and uncertain, and I was exposed almost constantly to failures. This, though annoying and frequently discouraging, was the only means of instruction by which I was finally able to grasp the subject with sufficient clearness to reduce the knowledge to a practical basis.

During the early part of my experience I was greatly misled, and consequently lost much valuable time in experimenting on wrong principles and methods of treatment, and was compelled to abandon such methods by reason of failures. In this way I was led to study out new principles and methods of treatment, adapted to the various peculiarities of disposition and character in horses, until I was able to discern with great certainty the exact treatment for each case.

The prevailing lack of confidence in my principles and

methods of management was also a serious cause of embarrassment to me, since it continually forced me, at great expense and loss of time, to make experiments upon the most vicious horses that could be found, in order to prove the value of my treatment. The experiments in New York City, and other places, referred to in Personal Experience, will in part illustrate this.

In the winter of '78 my health had become so seriously impaired that I was compelled to give up traveling. I now concluded to carry out at my leisure the purpose which had for some time been developing in my mind, that of writing out the full details of my system, including such knowledge as I believed most valuable to horse-owners for reference. I at first intended to make a work of only about three hundred pages, which would embody merely the simple outlines I gave to classes, with some additions to the treatment for sickness and lameness which I had already given in my old book. But after writing it up and preparing the illustrations I supposed necessary, I could see so much that should be added, that I was induced to rewrite the whole matter, bringing it up to about six hundred pages with about three hundred and fifty illustrations. When this was completed, I again found it necessary to make still more additions, until it grew upon my hands to its present size and number of illustrations.

The great point in teaching classes was measured by the success I had in the control of such especially vicious horses as might be presented for experiment, often requiring nearly the whole time at my disposal. As a general thing, even the best class of people cared but little for principles, which were really the most important and necessary to a true understanding of the subject. They simply wanted the proofs of what the treatment would do. Consequently, if I could only be successful in hitching up,

driving, or controlling, as advertised, such horses as they might produce (and the more quickly and sensationally this could be done, the stronger the proof of my skill), no matter how loosely or imperfectly the explanation of principles was given, they were sure to be satisfied. But it in all cases limited me to such a mere outline in the explanation of principles as well as details of treatment, that though I was in nearly all cases successful in giving the most perfect satisfaction to all who attended my lectures, it was no less true that but very few received more than the most limited idea of my methods of treatment. It was rarely that even the most attentive members of the class could explain more than the simplest form of war bridle, or put on the rig for the first method of subjection, even after being fitted. Possibly they might put on the cord in a rough way for the third method, but they received nothing like the clear, comprehensive knowledge of the subject which can be obtained from this work.

The value of this book depending mainly upon its authenticity, I deemed it necessary to include a chapter explaining how I came to engage in the business, with an outline of my progress, under the head of Personal Experience. I have included many indorsements, some of which are so strongly personal, that delicacy would forbid their presentation, but I felt compelled to do so to give greater authenticity to my statements.

With the enlargement of the work, grew also the necessity for making the department for the treatment of sickness and lameness equally complete. With this object in view, I made considerable effort to secure the aid of the best veterinary skill I could find. I first called upon Dr. Bates, the Dean of the Columbia Veterinary College, N. Y.; also upon Dr. Walton, the House Surgeon of the same institution, to whom I gave my plans. They treated

me cordially, and promised me all the aid in their power, Dr. Walton afterward giving me much aid on several important points. By his advice, I called upon Dr. Hamill (416 East 14th Street), formerly Professor of Pathological Shoeing in the college, for the purpose of getting his assistance in the writing of the chapter on Shoeing. This gentleman, upon introducing myself, recognized me as an old acquaintance, having attended my lectures while in the city in 1872. He expressed himself especially interested in my efforts, and volunteered all the aid in his power to give. I took notes from him on all the necessary points on Shoeing, and he promised to read over anything I should write on the subject, and make such additions or alterations as he might find advisable. I found it more difficult to secure the necessary assistance in the other departments. I stated the difficulty to Dr. Hamill, and expressed the fear that I would be likely to fail, when he came nobly to my aid, with his personal services and fine library, which were constantly at my disposal. He also secured for me the help of two of his colleagues, Dr. Meyer (409 East 84th Street), New York City, and Dr. John McLaughlin of Jersey City, now of Providence, R. I., both of whom a few years previous had graduated with high honors at the Columbia Veterinary College.

To facilitate my work, I had these gentlemen dictate to me the outlines of treatment in the simplest language possible, with permission to make any changes I desired. The dictations in all cases were made without premeditation or study, the point in view being to give me facts in the fewest words. This was the more difficult for them from the fact that in all cases they were limited to my ability to take notes, as on account of the peculiarly sensitive condition of my health I could endure but very brief conversation, and but thirty or forty minutes' writing

at one time. But, notwithstanding the generous aid given me by the gentlemen named, especially Drs. Hamill and Meyer, there was still much important matter needed, which I was finally so fortunate as to secure, prepared by no less an authority than that of a gentleman, who is at the head of one of the most popular and successful veterinary colleges in America, but whose name I am not at liberty to publish. To this authority I am indebted for the matter comprised in articles on Inflammation (page 746), Catarrh, Bronchitis, Chronic Cough, Inflammation of the Bladder, Indigestion, Diseases of the Eye, etc., etc., together with other matter referred to. I made such changes in, or additions to, this matter, as well as added new treatment, as would make it most desirable for popular reference. I may mention also that I have been specially fortunate in securing many favorite prescriptions of great value from leading practitioners, for which I would gladly give credit if not debarred by special request.

I especially desired to have the explanations of treatment free from technical terms, and so clear and plain that any one could understand without difficulty. I have made a special effort for this in the management of such diseases as are most dangerous and common. This will explain the reason for giving so much space, and the large number of illustrations to shoeing, spavins, navicular joint lameness, etc.

As explained in the note to the chapter on shoeing, it will be found that Prof. E. A. McLellan of Bridgeport, Conn., at present Lecturer on Shoeing and Diseases of the Foot in the Columbia Veterinary College, gave me valuable aid in that department, for which I would make him due acknowledgment. The extreme pressure of his professional demands only, prevented his giving me more especial assistance at the time, but which he kindly promised to

give me, if necessary, at some future time. Dr. McBeth of Battle Creek, Mich., has also rendered me much valuable assistance.

The difficulties I encountered in making this work will be better understood by giving the simple facts, which it is hoped will be accepted as sufficient to excuse for whatever is faulty in its writing or arrangment: First, I am not a practical writer, and owing to serious cerebral inflammation I have not been able to write a single page of this book with my own hand, nor read any part of it for revision or correction. It has been dictated by me to a copyist, then read for revision, making the work extremely laborious and difficult. It will, however, be found to give in the most faithful manner, without any RESERVE WHATEVER, all the points of my work more carefully and thoroughly than I could possibly do before a class. I desire emphatically to state that I do not keep back any secret whatever, and would further state that if I did not wish to make my system of treatment entirely accessible to the public, there are many single points herein published which I would not give for one hundred dollars; but which, as any one must see by the remarkable results of my experiments, are invaluable to practical horsemen upon all classes of vicious horses; so that by its instruction their subjection and management should be accomplished without difficulty.

This work is not only the first of the kind published explaining the art of taming and educating horses, but it is the practical outgrowth of my own experience. In its writing I have not only aimed to give the FULLEST EXPLANATION OF MY PRINCIPLES AND METHODS of management, with all the details carefully classified, but as an additional aid I have included the details of treatment of nearly fifty of the most INTERESTING AND DIFFICULT cases treated by me, giving age, color, cause of viciousness, etc.

It has been well known wherever I have traveled that I taught my system as a secret which I never gave in print; and on account of the great expense in traveling, requiring not only the aid of skilled men, but from five to ten horses, to give me a reasonable compensation, I was compelled to charge five, and in some sections of country ten dollars for such instructions, thus putting them within the reach of but comparatively few. The importance, then, of making this knowledge available to all at a moderate cost, can be seen.

After writing this introduction, I incidentally find in a work called "The First Century, or One Hundred Memorable Events in the History of Our Country," by R. N. Devens, Esq., a chapter on John S. Rarey's achievements, which is so remarkable in the extravagance of its statements that I consider it necessary to refer here to the facts in the case. After the lapse of twenty years, when the method of treatment used by Rarey is not only known by every school-boy, but has practically gone into disuse, such statements from a man of Mr. Devens' reputation for historical accuracy as a writer, a brother of a former Postmaster General, a member of the Historical Society of Pennsylvania, and author of Appleton's Commercial and Business Encyclopedia, Lives of Washington, Napoleon, Wellington, etc., in a work of so important a character, by such an author as the one mentioned, it carries with it such unusual weight that it would naturally, if unchallenged, be accepted as indisputable authority.

For the benefit of my readers, I will copy a few paragraphs in relation to Cruiser, to show the extreme perversion of facts when compared with the statements given under that head in another chapter of this book:—

"Cruiser's habit, it appears, was to scream and yell when any one approached him, to smash up his stall into lucifer matches, and to attempt to bite and destroy every living thing in his neighborhood. Noblemen used to go and throw articles into his brick box, in order to see him fight. When he was to be fed or watered, the first proceeding with his groom was to ascertain, by thrusting a long pole in at the stable door, where the enemy stood, and then

to deposit the food, shut the door, and vanish as soon as possible. *Mr. Rarey changed all this in a moment as it were.* He ordered the stable door to be thrown open, introduced himself according to his system, without delay, and in half an hour the indomitable Cruiser might be ridden by a child, could listen tranquilly to the beating of a drum, and stand serene even if an umbrella were flourished in his face. Gentle as a lamb, he followed his teacher about the arena like a dog, stopping when he pointed his finger, lying down when he was told, rising again when he obtained permission, and doing all this in a mild, good-humored sort of way, as if the wish to oblige was the sole ruling motive, and that the now docile Cruiser was totally unaware of that terrible array of whips and spurs, bits and muzzles, with which his first teachers had sought to check his ferocity and bring him to reason. The speedy, easy, and complete success of Mr. Rarey, in this remarkable case, gave him, at once, the most flattering and exalted reputation from one end of Europe to the other.

"On Mr. Rarey's appearance at Niblo's in New York, he exhibited this renowned specimen of the equine race—an animal over sixteen hands high, and of immense bone and muscle—and said: 'When I went to England and exhibited there, the papers all said, "This is very well, but try Cruiser!" I immediately wrote to Lord Dorchester about the horse, and he replied that the horse could not be brought to me, but that I must come to him. I did go to him. The horse had not been out of his box for three years; a brick stable had to be built for him, and he would have been shot, but he was the last of a race of splendid blood-horses, and his owner was anxious to preserve him if possible. I found that by his biting and kicking he had so injured himself that he could not be taken out of his box, and so I had to wait for his recovery. I went down to see him, quietly and unknown, but somehow the papers got hold of it, and everybody said I dared not go near Cruiser.' Under these circumstances, Mr. Rarey was detained some three weeks, when he went to London accompanied by the now subdued steed.

"The collar and muzzle which Cruiser used to wear were exhibited by Mr. Rarey. His owner could place them upon him only by letting a rope down through the roof of his stall, fastening it under his neck, and raising him off his fore feet. The exhibition at Niblo's was the first time Cruiser had been on the stage in America. 'We have,' said Mr. Rarey, 'had no rehearsal; but instead of kicking, as he used, he will now (as you see) give me his foot like a gentleman.' Two straps were now shown, being all that had been used in taming this horse. Mr. Rarey, on being asked to explain more particularly how he approached Cruiser, said: 'I think horses have a reason for everything they do. I

knew if I approached Cruiser with a stick, he would fight me, as he had fought others who came to whip him. In the box was a double door, so that I could open the upper half. I went quietly, opened the door noiselessly. Cruiser turned round, saw me, started back frightfully, but did not attempt to come at me. He came slowly up to smell of me after a while, and in spite of Lord Dorchester's entreaties, I stood still. Presently, when I saw that he stood naturally, I began to fondle him. Lord Dorchester begged me to tie his head, and I did so, but you never saw such fighting. Finding that he would either kill himself or tear down the box, I released him and began all over again. After he allowed me to fondle him, I took him into the straw-yard, and proceeded as with any other horse, until at last he would let me take any liberty with him, and Lord Dorchester mounted him with impunity.' Mr. Rarey declared that Cruiser was about as celebrated for his viciousness as he himself was for taming him.

"Appealing to the intellect and affections of the horse, as the basis of his system of treatment, Mr. Rarey was enabled to say to his vast audience at Niblo's Garden, New York: 'I never had an accident since I became perfect in my system, and I don't fear any. I have been among horses since I was twelve years old, and at first had a great many accidents. Every limb has been broken but my right arm ; but being young when these accidents happened, the bones naturally healed strongly. Now I know horses' every thought, and can break any animal of whatever age and habits in the world. I can make any animal sensible of my power—make him gentle and even affectionate.'"

According to these statements, Rarey was able to exhibit a degree of power over vicious horses that had never before or since been attained or even approached, making himself a landmark of genius and skill that could not be equalled, and that all this was accomplished by the use of two ordinary straps.

The boldness of his claims, as thus set forth, deepens into audacity when they are examined in the light of the facts which I have been enabled to demonstrate, the full particulars of which will be found on pages 368–384 of this work. Much as I dislike to mar the posthumous reputation of any man, and especially one whose fame has been won in a field similar to that occupied by myself, I deem it an act of simple justice not only to myself and my many thousands of pupils in fifteen different States, but to my system of treatment, to expose the fallacy of Rarey's pretensions, especially in reference to Cruiser, on whose subjection more than any or all other of his feats his reputation was made. In the first

place, it is not true that Cruiser was not taken from his stable for three years, and that he would have been shot, etc., which is proved by the fact that he was let for breeding purposes at a rental of $500 per season, and was taken out almost daily, and controlled with but little real difficulty. He never was pulled up from the ground to have a collar put on him, nor did he ever wear an iron muzzle. Also, instead of going into his stable as stated, and controlling him so easily and successfully, the experiment was a failure. His control was owing entirely to Mr. Goodenough's management, and by a method of treatment which, had it been known at the time, would have utterly destroyed Rarey's reputation or claims to success; hence the claim set up for his unusual inherent power, and for the system as being a perfect and complete method of subjection, falls to the ground.

The additional fact that Cruiser and the other cases, when out of Rarey's hands, returned to their former vicious practices, and again became unmanageable, also demonstrates the fallacy of these claims, and proves conclusively that the horses were not subdued, except to a condition of temporary obedience, the ruling principle of which was fear. It is also apparent that the assumption of knowing a horse's every thought, and being able to subdue any horse or animal in the world, amounts to nothing, because, like the other pretensions, it was all assumed for effect. What he practiced, he learned of Denton Offutt, from whose book an interesting chapter will be found on pages 449 to 456. The writer visited professionally every town in the vicinity of Groveport, Rarey's old home, and although he made the most diligent inquiry of old settlers, he found no one who claimed for Mr. Rarey any noticeable success in the control of horses, before going to Europe.

The true key, which has been overlooked by Mr. Devens, and in fact all other writers on the subject, was the consummate good management exhibited by Mr. Goodenough, by which, as the first movement on reaching England, permission was secured to exhibit before the queen and the royal family, even before they had demonstrated a right to such distinction. Their continued success in maintaining their hold upon the public opinion, was also due to the adroitness of Mr. G. in surmounting the difficulties which arose, and which so firmly established their claims in the public mind as to require, even at the present day, the most positive proofs to show their unreliability.

Nearly all my scholars of late years understood and practiced this method of treatment, and I was compelled, as a condition of satisfying them, to prove the superiority of my treatment. Then nearly every vicious horse brought forward to be experimented upon had been subjected in the most thorough manner to the method of treatment used by Rarey. The Wilkins horse of New York, case 6, Subjection; the Malone horse, case 2, Kicking; the stallion Jet, case 7, Subjection; with many others, though comprising but few of the large number treated, were good illustrations. The Wilkins horse was treated for a week on this principle without doing any good whatever. He had been treated so much that the moment his foot was taken up he would lie down apparently gentle, but when again upon his feet, would become thoroughly wicked again. The Malone horse had been subjected to it in the most thorough manner without avail. In the case of Jet, which was a particularly bad one, the treatment was equally inert, and had no effect at all upon him. The same might be said of hundreds of others treated by me before my classes, or as special tests in the presence of experts, The quickness and complete success of the experiments, in these and other noted cases, are results which are conceded to have been shown by no one else in so short a time in the control of vicious horses, either in ancient or modern times.

A feat that I performed almost daily, and which would have been utterly impossible to accomplish by the Rarey treatment, was the subjection of headstrong, unmanageable stallions, so that they would not only follow any one without restraint but, at a distance of ten feet, could be called away from a horse or mare. This apparently impossible feat I guaranteed to perform within ten minutes, with a forfeiture of one hundred dollars to the owner in case of failure. It is proper to add here that during the last few years, most of the experiments made before my classes were in part or wholly performed by my assistant. Not only this, but my scholars could readily do the same, and very many of the cases were fully as difficult to manage as those referred to.

CHAPTER I.

METHODS OF SUBJECTION.

In the subjection and education of horses we have three natural difficulties to overcome. First: The horse is much stronger than man, and just so far as he learns in any way that he can resist his control, to that degree

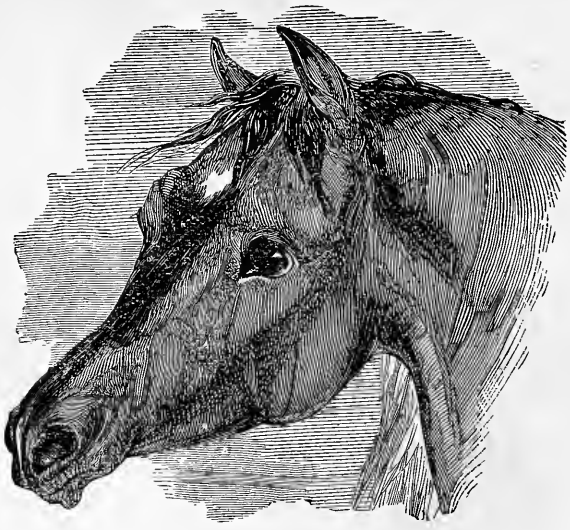


Fig. 1.—An intelligent, courageous, yet extremely sensitive nature. A sketch from life of a noted Arabian Horse.

will he be encouraged to become unmanageable and vicious. Second: His methods of reasoning being limited to seeing, hearing, and feeling, to prevent his becoming excited or frightened at objects and sounds with which he is

brought in contact, he must be convinced of their innocent character by his own way of reasoning. Third: He cannot understand the meaning of language or words of command, excepting so far as he is taught by associating them with actions; consequently he cannot know what he is required to do unless shown and taught in a way he can comprehend.

FIG. 2.—Ideal of an intelligent, docile character.

Taking these conditions in order, we see, for example, that if a horse learns to pull away, break his halter, resist the blacksmith in shoeing, or run away, etc., he will be encouraged to do so afterward, until the habit becomes fixed. On the contrary, we see that when a colt is first haltered, no matter how hard he may resist, when once forced to submit he will not only follow readily without restraint,

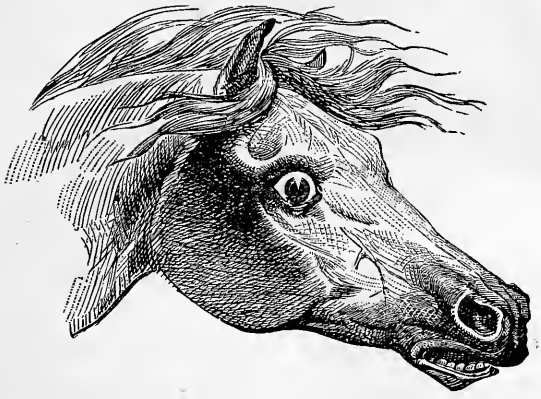


FIG. 3.—Ideal of a sensitive, nervous character.

but will continue to do so afterward; also when the feet are taken up and handled until the operation is submitted to, or such restraint brought upon the mouth as to overcome the power of resistance, there will not only be submission for the time, but, if done properly, all inclination to resist afterward will be overcome.

FIG. 4.—Sullen treachery.

The principle is the same in relation to other habits, or in overcoming viciousness. No matter how wild or vicious the horse may be, if so controlled that resistance becomes impossible, and his fear is overcome by kind treatment, there will not only be entire submission without the use of power or restraint, but he will remain so afterward if not abused or excited.

FIG. 5.—Sketch from life of the most vicious Mustang Pony the writer ever saw.

Second. We see that when an object or cause of unusual sound is brought suddenly or un-

expectedly to his notice or in contact with his body, it is liable to excite the most intense fear or resistance, and of which he will ever afterward be afraid; whereas if brought slowly and gently to his notice, letting him smell and feel of it, it can soon be brought over or around him without causing the least fear, or attracting his attention. It does not matter whether it is in driving to carriage, letting the crosspiece come across the quarters, raising an umbrella behind, or the noise of a steam-engine, etc., the effect is the same.

FIG. 6.—Sketch from life. Good illustration of a vicious, treacherous nature.

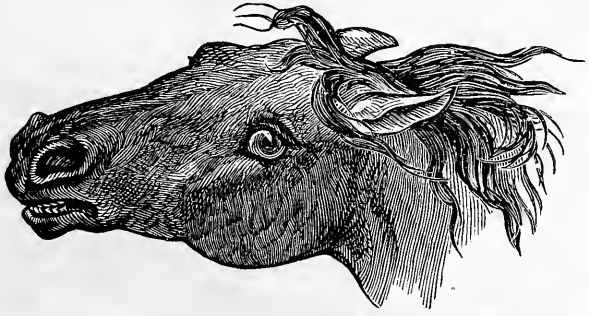


FIG. 7.—The Hilman Horse, "Jet." A noted vicious Stallion.

Third. In relation to teaching the meaning of sounds or words of command. It is evident that if a man were to sit on a block and simply repeat the word "whoa" to a horse, he might do it indefinitely without teaching him its

meaning. But if the horse were moved moderately, and immediately after the command he were pulled upon sufficiently hard to make him stop, he will, after a few repetitions, learn to stop at command, to avoid being pulled upon. Or in teaching to back, if, after the command is given, the reins are pulled upon sufficiently to force him back, he will, after a few repetitions, soon learn to back freely when the word is given, to avoid the hurt of being pulled upon. To explain this principle more fully I will give the details of teaching a few tricks:

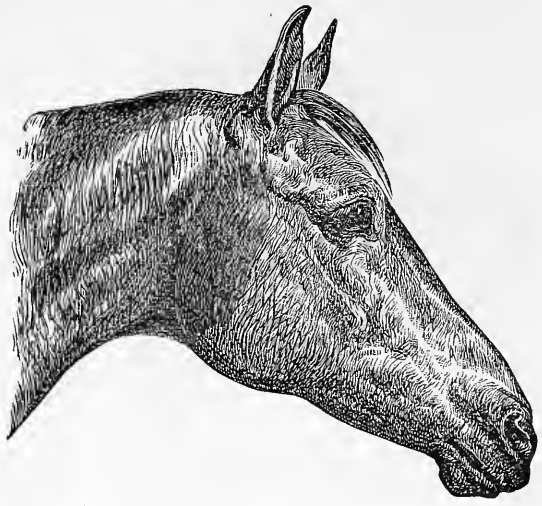


FIG. 8.—Naturally docile and intelligent.

If it is desired to teach a horse to make a bow, first prick him lightly on the back with a pin, and repeat until in his effort to avoid the annoyance he drops his

FIG. 9.—"Wild Pete." A very peculiar and interesting case.

head; then instantly stop the pricking and caress him. Repeat the pricking until the head is again dropped; then caress him, and give him something of which he is fond. Continue to alternate in this way with the pricking and caressing until at the instant a motion is made toward the back he will drop his head.

FIG. 10.—The Allegan Man-eater.

To teach to kick up, simply prick him on the rump until there is an inclination to kick up, when, as before, stop and caress him. So repeat until the least motion toward the rump will induce him to kick up.

FIG. 11.—Sketch of a noted vicious Stallion.

In teaching any kind or number of tricks the principle is precisely the same, the difference being that instead of a pin, other means suitable to the requirements of the case must be used.

Now, to teach these tricks by word, it will be necessary to repeat the command and associate the act with it;

that is, "make a bow," "kick," etc., in connection with the signal of whatever trick is being taught, until there is obedience. An important point in teaching tricks is to guard against confusing or exciting the horse; therefore but one trick must be taught at a time, and that slowly and carefully repeated until thoroughly understood. Then another trick is to be taken up, and so on. At each progressive step review the previous tricks until any trick demanded will be promptly performed. The duller the horse the less can be attempted, and the more time must be given, while the more intelligent the horse, the more can be done and taught. To have prompt obedience at the command, the exact signal and word given in teaching the trick must be repeated, even the tone or pitch of the voice, otherwise the horse will not know what is wanted of him, and he will become confused, and consequently unable to obey.

Fig. 12.—Strong willed, intelligent character.

Fig. 13. Barnyard Lunkhead.

The principle is the same in teaching a horse to do anything in or out of harness, the difference being that

such means as will give more power of control must be used. Now the point of real interest, and the one to which I wish to call special attention in this connection, is that the principle is precisely the same in either overcoming or preventing viciousness or bad habits of any character. The only difference is that instead of teaching a trick we now combat the habit or viciousness already formed, simply repeating until there is entire docility.

FIG. 14.—Docile, intelligent.

If a man were strong enough to take a fighting "bully" by the shoulder and shake him so thoroughly as to show him he had power to control him as he pleased, and then treat him kindly, it would have a better effect in convincing him of his mastery and make him less inclined to resist, than if he had controlled him after a desperate struggle of half an hour or more, that would necessarily greatly strain or injure him physically. Or if the contest were carried on in the presence of others, where his pride would be greatly stimulated, or under circumstances that would arouse his bad nature, he would allow himself to be punished most severely before he would submit.

FIG. 15.—A noted vicious Horse.

On the same principle, if a man could catch and hold a horse, or control him as he wished, so as to completely prevent his struggling and becoming excited and heated, until the muscles are entirely relaxed and he becomes submissive, and then win his confidence by kind treatment, scratching the mane, giving apples, etc., it would be the most efficient kind of subjection. But as there is not power to do this, we must resort to such means or methods of management as will come as near it in principle as we can. In doing this, if the horse were given such freedom as to encourage his confidence to resist, or his bad nature were called out by ignorant, abusive treatment, in like manner he would, in the fury of his madness, resist with the greatest perseverance, regardless of even the most severe punishment. Then again, the resistance, whatever it may be, is only a symptom of the real cause to be overcome, which proceeds from a condition of the brain, or the impression made upon it.

FIG. 16.—Sketch of a noted vicious Horse.

FIG. 17.—Expression of vicious, bad nature.

On this account, controlling physical resistance becomes but a temporary bridge across a gulf to enable building the real structure. So subjection is but a means for reaching the brain to remove the exciting cause of the resistance. If stimulated by fear, then to show there is no cause for fear; if through real viciousness, then to remove the resentment by kind treatment; when the horse's reason can be molded and instructed in any channel desired.

The next difficulty is the different degrees of resistance to be met with in different horses. A dozen horses may break the halter or kick. One may be broken of the habit quite easily, another may resist ten times as long, while the third may even require hours of treatment, the difference being in the pecularity of character and temperament. The better to aid in explaining these conditions, I present a large number of representative heads, with some references to aid in determining the treatment to be employed, and which should be studied carefully. An important condition also is to guard against possible accidents, because this would defeat the very end for which the treatment is intended. For more particular reference, see part following "Medicine" in chapter on "Subjection."

FIG. 18.—Vicious.

FIG. 19.—Treacherous.

I give three direct methods of subjection, followed by several indirect methods. The first is based upon the principle of disabling and throwing. So far as we disable any part of the horse's body, we produce to that degree a sense of helplessness in him. So when we disable the whole body, or overmatch the power of the horse wholly, we create in him a powerful impression of our mastery and a corresponding sense of his own helplessness.

The method given of throwing a horse, called the

FIRST METHOD OF SUBJECTION,

Is the simplest and most effective form based upon this

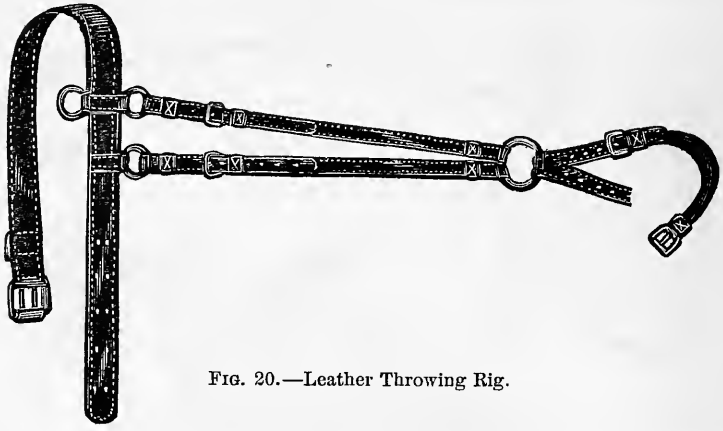


FIG. 20.—Leather Throwing Rig.

principle, and is the outgrowth of a great deal of practical experimenting.

There are two rigs here given; one of leather, and one of rope. The Leather Rig works well, is not difficult to fit, but is troublesome to make, and expensive, costing from eight to fifteen dollars. The Rope Rig works equally well, and can be made of any old rope in a few minutes, at a merely nominal cost. For the first, or Leather Rig, the sur-

cingle should be made of two thicknesses of good harness leather, about three inches wide, and about eight or ten inches longer than the circumference of the body. The buckle should have two tongues, and be made of good wrought iron. When this rig is on and drawn tightly from the part over the back bone, a double strap, the length of the back, with a strong crupper, should be attached. Four or five inches on the off side, should be fastened at the front edge of this surcingle a strong two-inch ring. On the opposite edge should be attached another strap extending to a ring upon the back strap at the hip. A little pad should be fixed to the part coming across the back, to prevent bruising or chafing it.

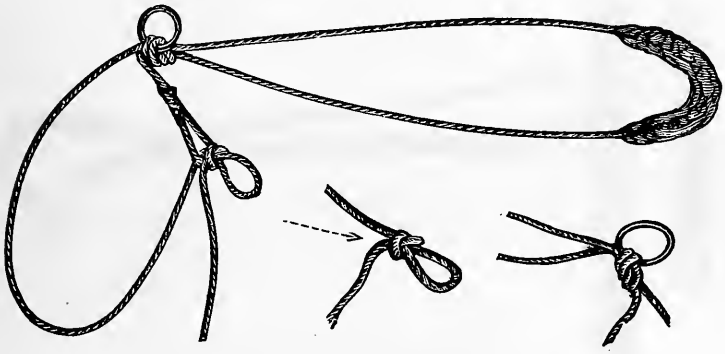


Fig. 21. Simple Rope Rig.

To make the Rope Rig, procure a three-fourths-inch rope, eighteen or twenty feet in length. One that has been used enough to render it pliable is best. Make a simple loop about three inches long at one end, and double the rope about four feet from the loop. Pass over this doubled part a three-inch ring made of three-eighths rod. Measure the distance from the tail to where the saddle of the harness comes, to which bring the ring and make a simple knot of both ropes around it, regulating it to the

length of the back as it is tightened. Next, put the double part under the tail, twist two or three times, and bring the part with the ring to its place about eight inches to the right of the back, with the loop

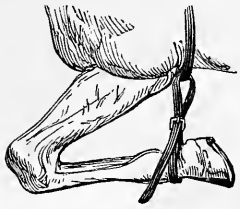


FIG. 22.—Foot tied up.

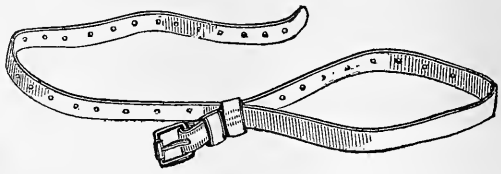


FIG. 23.—Foot Strap.

toward the near side. While holding it in position, reach under the body, catch the opposite end of the rope, bring

FIG. 24.—The Rig as arranged for throwing.

it through the loop, and draw down to the size of the body. Make a simple knot in the rope, which forms a button and keeps it from slipping out. It is also necessary to protect the back and tail by winding the part of the

rope coming under the tail, and putting two or three thicknesses of cloth or blanket between it and the back.

Next, put on a strong strap halter with the nose part coming well down, and draw it up rather close back of the jaw; then take a piece of strong cord, from five-sixteenths to three-eighths of an inch in diameter and about twenty feet in length, tie a hard knot in each end, and fasten one end

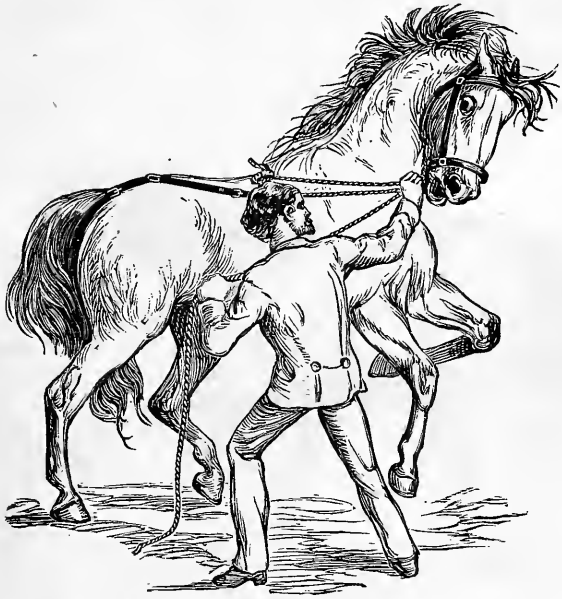


FIG. 25.—Turning a stubborn Horse around before throwing.

around the rope or surcingle just above the ring. Pass the other end, from above, down over the strap of the halter back of the jaw, thence back and down through the ring referred to, until the slack is taken up. Now tie up the near forefoot. The best way to do this is to pass an ordinary hame strap around the foot, thence to the belly-band, and buckle short.

Though this method, when properly used, enables throw-

ing a horse on even very hard ground without bruising the knees or other parts, still it is very important, and adds greatly to the ease of throwing to have good soft ground. The best is that which is free from stone, with thick, soft sod, as an orchard or meadow, a ploughed field, or a place liberally covered with straw or manure. Presuming that such a place has been selected, stand almost in front of the

FIG. 26.—Usual position of a Horse that resists strongly before being thrown.

horse at the right, have a firm hold of the cord about seven or eight feet from the shoulder, and pull gently, but firmly. This will draw the head back to the side, and the body being thereby thrown out of balance, the horse is forced to fall over with a rolling motion on his side. If during the first trial he resists, let him have his own way a little while, and when in a good position, pull quickly, and he can be easily forced off his balance and made to fall over. If a strong-

willed, headstrong fellow, disposed to resist hard, perhaps lunging forward, etc., as some horses are liable to do, take a firm hold of the cord and run around in a circle until he is made to follow, hopping steadily (as shown by cut 25), then stop, pull quickly, and he will be easily thrown over upon his side. (See cuts 27 and 29.) As soon as the cord is slacked he will jump up, but by repeating as before he will again be thrown. Simply repeat the throwing as long

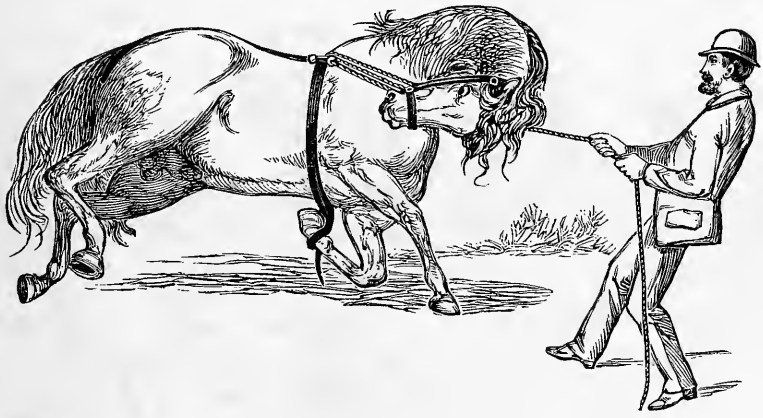


FIG. 27.—As the Horse will usually fall.

as the horse will get up. If he does not attempt to rise after being once thrown, stand behind him, keeping firm hold of the cord, and strike the belly with the hand or touch him with the whip, to incite him to jump up; and on the instant of his doing so, pull quickly upon the cord, which will again roll him back helplessly upon his side.

If the horse is sensitive upon the belly, quarters, or the feet, while down and forced to yield, first touch the parts with a pole until he will submit to it, then with the

hand until there is no incentive to resistance shown by the muscles becoming relaxed; after which he should be al-

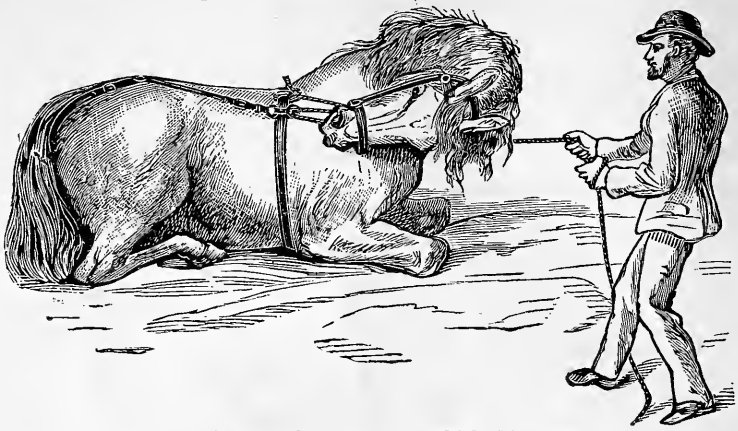


FIG. 28.—Type of sullen character upon which this method will fail.

lowed to get up, and the handling or touching repeated until submitted to on his feet. Sometimes it is necessary to reverse the treatment, and throw the horse on the op-

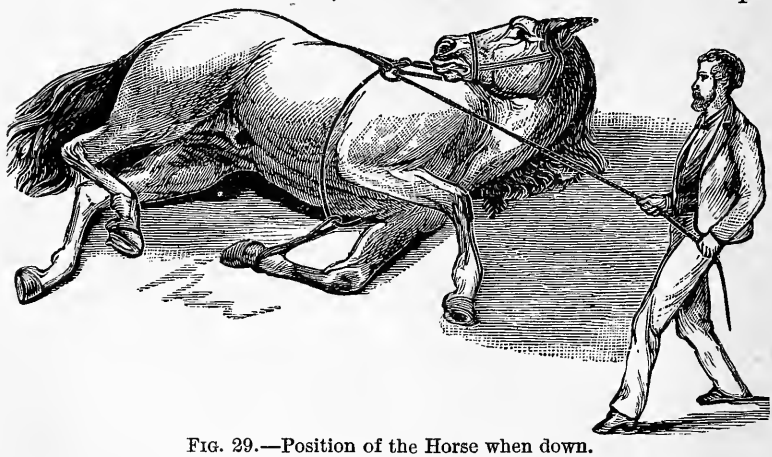


FIG. 29.—Position of the Horse when down.

posite side, before he will be entirely submissive; but after being thrown to the extent of making him lie down submissively, it will do no good to repeat the treatment.

If the impression produced is not sufficient to break up the horse's confidence and prevent a repetition of the habit, whatever it is, the treatment is a failure in his case. For example, if the horse is a kicker, and persists in kicking after the full extent of the treatment, it should be abandoned; but if the habit is given up after several times throwing, and he sbbmits unconditionally, it is the right treatment for him, and all, in a general way, that is needed.

Fig. 30.—Rolling the Horse back when struggling to rise.

On the other hand, if the horse drops or lies down submissively, refusing to get up when touched or handled, it will fail. It should not be used upon nervous, irritable, unbroken colts, especially those showing a wild, sulky, or mustang nature, as they are liable, as soon as the leg is tied up, to lunge, or when pulled upon to throw themselves recklessly or sullenly down. For the subjection of such cases, and all colts, balkers, and horses bad to shoe, harness, clean, or ride, it is not so good as the Second Method. It is most valuable when used in connection with the other methods. In some cases of nervous character, if the horse

can be safely thrown once, rolling him back, as shown above, until there is submission, will have a good effect.

Fig. 31.—The Horse subdued.

Second Method of Subjection.

If one were to turn around rapidly a few times, he would become dizzy. Were he to suddenly reverse the motion, the effect would be so intensified as to cause falling. The effect is the same upon the horse, and gives almost unlimited power in the control of wild, nervous, vicious, kicking, runaway horses.

I once had such a horse brought to me to experiment upon before a class. He was a nervous, kicking, runaway horse of the worst character. When hitched to a buggy, he became frightened, kicked, and ran away, tearing the buggy to pieces. He was so desperately afraid of a wagon that he could not be put in shafts or even brought near

them. After working upon him for two hours, aided by members of the class, and resorting to every device in my power for his control, I completely failed. I was nettled, yet bound to succeed, but "How?" was the question. At this juncture I happened to think that turning around quickly several times in succession caused extreme dizziness and helplessness.

The question followed, "If I could make the horse turn

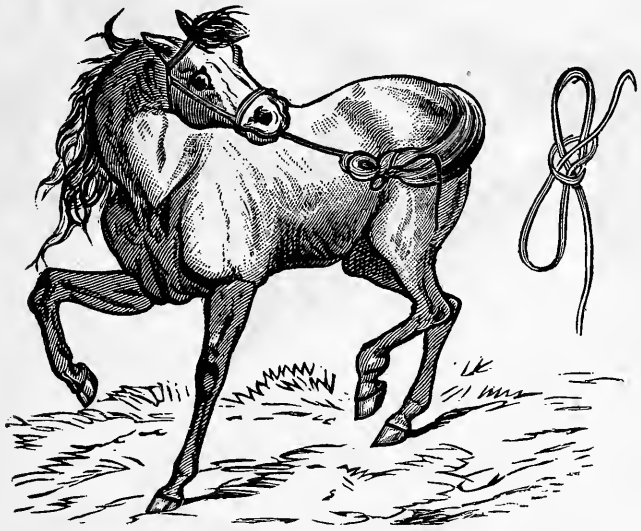


FIG. 32.—Method of tying halter to the tail.

around rapidly, why could I not neutralize and overcome his resistance in this way?" I remembered having once seen a dog in play catch his tail in his mouth and run around, and it occurred to me that by tying the horse's head to his tail he would possibly turn himself around. I did so, as shown in cut 32, and to my surprise and satisfaction he went around rapidly, and in a short time fell over, dazed and helpless. Soon recovering, he jumped up, turned rapidly as before, and again fell over. In course

of a few moments he fell over three times. (See cut 34) As before explained, he was extremely nervous and afraid

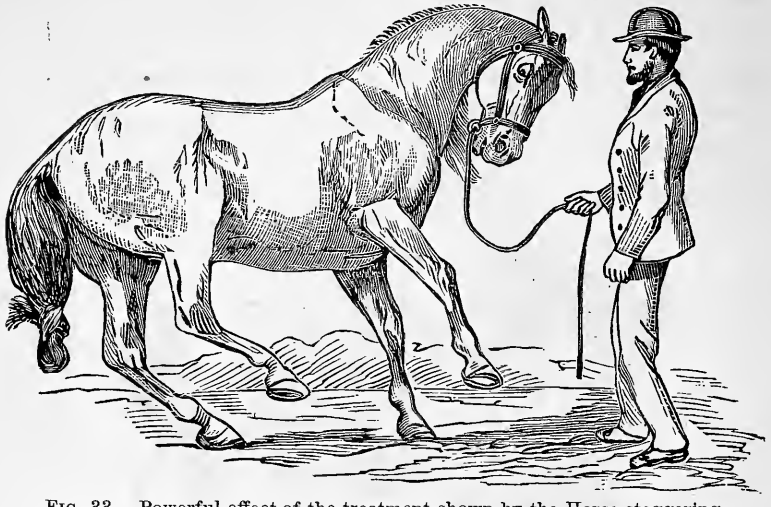


FIG. 33.—Powerful effect of the treatment shown by the Horse staggering to the point of falling when quickly untied.

of being touched; so as he went around, I brought the pole against his quarters until he was submissive to it.

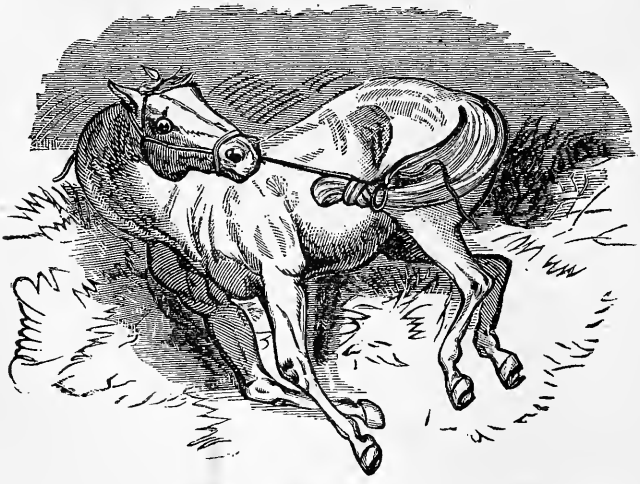


FIG. 34.—Position in which the Horse falls confused and helpless when turned too quickly.

The experiment proved a most wonderful success, as it enabled me to do in about ten minutes what was utterly impossible for me to do before in two hours, and with the aid of several men. I had, in fact, by the mere circumstance of failure made one of the most important discoveries that had yet been made in the art of taming horses.

This method is wonderfully effective in the subjection of colts and vicious horses, especially those of a certain

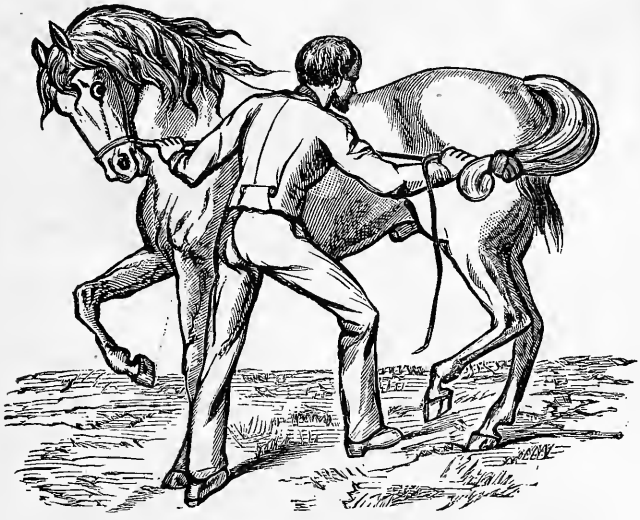


FIG. 35.—Method of holding the strap while going around with a doubtful case.

class of temperament, and in breaking single balkers. When combined with the other treatment, it makes easy and simple the control of horses it would be both difficult and dangerous to subdue without. For example, a wild, dangerous colt, mustang, or vicious mule, which it would be perilous to try to confine with straps or other rigging, with the aid of a simple halter, can be brought under control in a few minutes. Or if in any case this is not sufficient to compel entire submission, it will always give suffi-

cient advantage to subject safely to the other methods of treatment.

I will name this the SECOND METHOD OF SUBJECTION. The conditions to be observed in its application are as follows: First: Select a soddy place in a field or yard free from stones, stumps, or sharp fence corners. The place should not be too soft, such as a deeply ploughed field, barn-yard manure, or deep straw. Heavy sod with considerable grass is the best. Second: If there are sharp shoes on the feet,

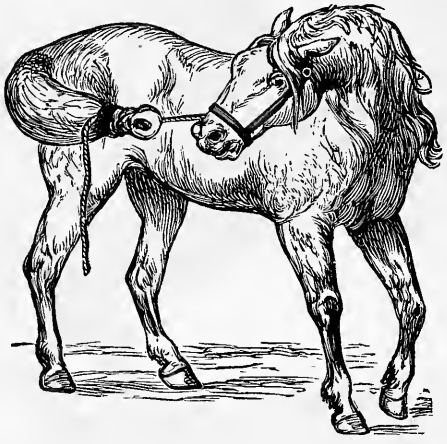


FIG. 36.—The sullen colt as he will usually stand refusing to turn when tied.

they should be removed before subjecting to this treatment; to neglect this would endanger calking or cutting the feet badly. Third: A strap halter should always be used. After catching the tail, take the strap of the halter between the teeth to enable the use of both hands, and tie the hair of the tail into a knot. Divide the hair above the knot, pass the strap through, and tie into a half-hitch knot. The strap should be drawn just short enough to compel the horse to turn fast enough to divert his attention (something as in cut 32) and make him helpless, but not so short as to

cause him to fall. The more nervous and excitable the subject, the longer the strap must be left at first; and the colder-blooded, the shorter must it be drawn. If at all doubtful as to the length, when the strap is run through the tail hold it in the hand and go around with him a few times (as in cut 35) so that the necessary length can be exactly ascertained, then quickly tie into a half-hitch knot and let go. If tied the right length, the horse will keep

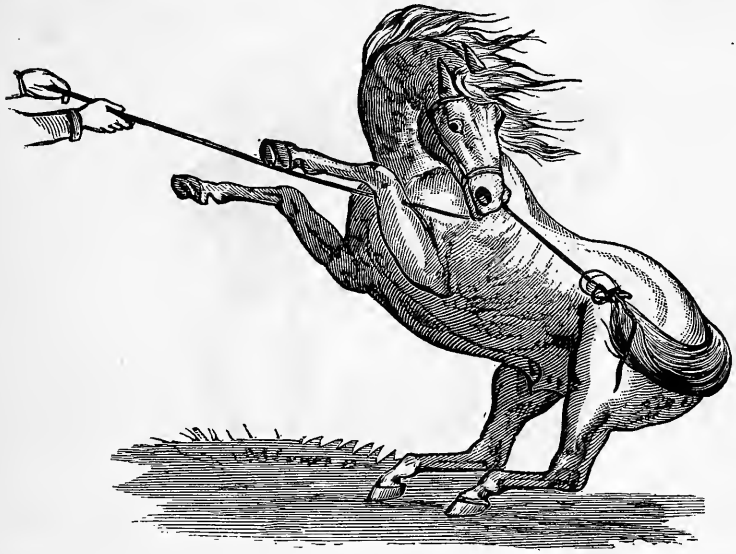


Fig. 37.—A vicious colt as he will usually strike when the pole is brought near his nose while turning.

moving in a circle as described; but if tied too short, or forced up to the point of falling, the moment he staggers pull quickly upon the end of the strap which will pull it loose, and tie again the required length.

Sulky or cold-blooded colts, if tied very short at first, are liable to throw the head against the nose-piece of the halter, and if pushed are likely to rear up and fall over backward. This can be easily prevented by holding the

strap as before up near the tail with one hand and the part near the head with the other, and going around with him a few times until he is dizzy; then tie quickly and let go. Motion toward the head while passing, and so continue until he moves steadily.

Now take a pole or rake handle about eight or ten feet long, and bring it gently against the legs or parts of the horse most sensitive, until there is complete submission to

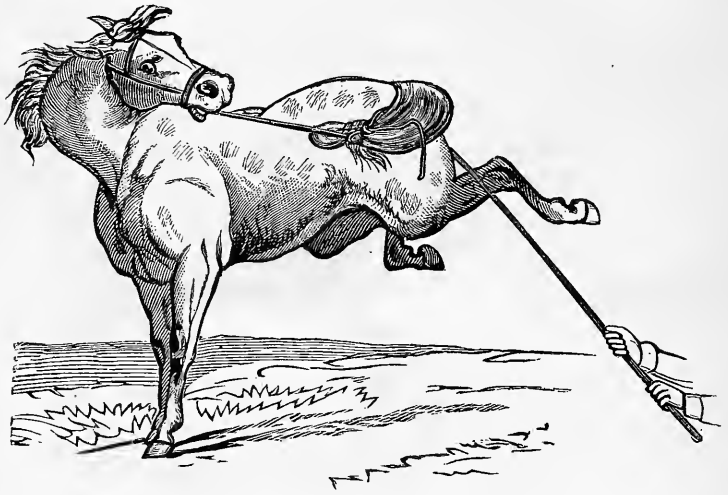


FIG. 38.—A vicious Horse as he will usually kick when touched with pole while turning.

it. This he will usually resent by kicking violently. Simply continue until all inclination to resist is overcome, so that after being untied the muscles are so relaxed that the feet can be taken up and handled without his showing the least resistance. Sometimes a young horse or colt will start all right, but when tested will not go sufficiently fast to enable his control. Under such circumstances, while moving touch sharply with a whip across the nose, and repeat until he is forced up to the point desired to compel submis-

sion. The point is to bring the brain to a certain point of inactivity and hold it there until he is helpless and submissive.

I soon learned by experience that by turning one way only, the impression upon the brain after a certain point diminished with the continuance of the turning; and that to maintain the effect it was necessary to turn the horse much faster, and even then, after a time, it would become

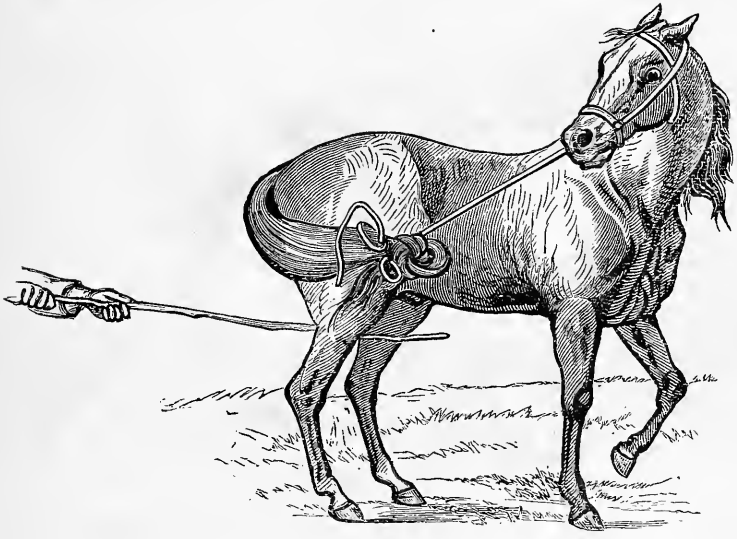


FIG. 39.—The first indication of submission—submitting to be poled.

inert. To remedy this, I reversed the action by tying in the opposite direction, which not only greatly increased the effect but enabled me to repeat the treatment with success to any extent. In many bad cases the horse should be turned one way up to the verge of falling, then quickly reversed, at the same time poling as before explained. It is necessary under such circumstances to watch carefully so as to be able at the instant there is any indication of falling, to prevent it by pulling the strap loose. The more

frequent and quickly the reversing and turning, the better the effect. In some cases it must be repeated rapidly three, four, five, and even six times before it will be successful. To do this successfully requires care and quickness, and the horse should not be given freedom to run against anything. After the horse has submitted, he should be thoroughly poled all over, the feet handled, etc., until there is entire indifference to it, then untied, and the same

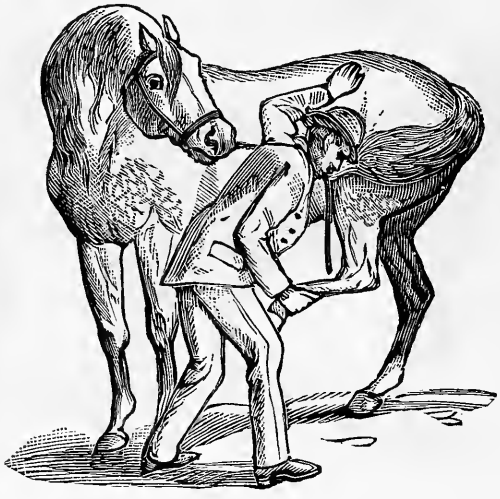


FIG. 40.—Taking up the colt's foot while tied—one of the tests in determining his submission.

handling repeated. If the treatment has been properly carried out, there should be no difficulty at this point in the handling, poling, mounting, etc.

This method of subjection is the simplest, the most humane and effective, all things considered, that has yet been discovered. It not only diverts the horse's brain from acting, but matches his strength so perfectly against itself, that he can be made entirely helpless without producing any pain or injury. It will effect the entire subjection

and docility of the average of the worst of wild, unbroken colts in from five to fifteen minutes, so that they can be ridden, have the feet handled, or allow anything to come against the quarters. (See cut 41). It gives, in connection with the War Bridle, the true key for breaking single balkers. It is singularly well adapted for supplementing the other methods, and effecting the control of extremely vicious horses that have partially or wholly resisted the other methods. It is also the safest and best method of treatment for

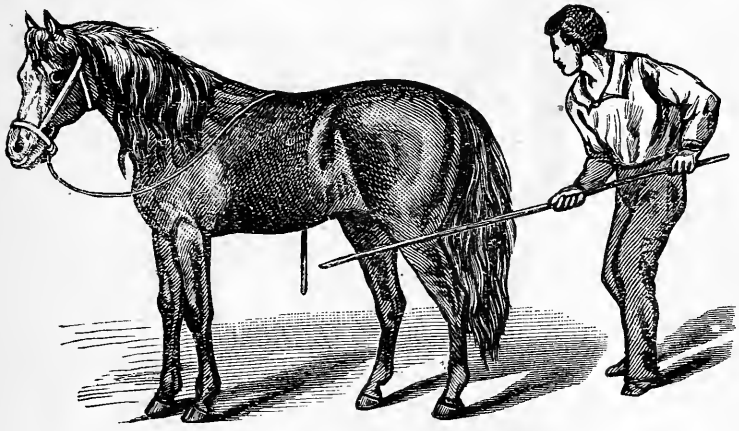


FIG. 41.— Method of testing after being untied.

the subjugation of extreme cases bad to ride, bridle, have the head handled; also those which have the habit of striking.

It will not work well upon kicking, switching mares, and colts of a slow, cold-blooded, sulky nature. There may also occasionally be found horses of quick, nervous, but decidedly determined character, that will at first seem to resist it, or fall down too quickly. The Third Method should be used for a short time upon such, to tone down their impetuousness, after which they will usually submit to this method without difficulty.

Though compelled almost daily to subject all kinds of

horses to this treatment in small barns and other unsuitable places, and surrounded by a crowd of men, by being careful I never had a serious accident occur. Of course, in a field or open yard the danger would be immeasurably diminished. Still I think it my duty to advise the greatest

FIG. 42.—One of the tests frequently given by the writer in proving the effect of the treatment upon a notably vicious case, when making experiments before his class.

care to prevent accident. By going slowly at first, and following up cautiously, there can seldom be an accident.

THIRD METHOD OF SUBJECTION.

It is well known that by hitting a horse at a certain point back of the ear, it is easy to knock him down; also if a horse were to throw himself over backward and hit this part on a hub or stone, he would be liable to be killed. At the front part of the atlas bone, or the first of the cervical vertebra, where it articulates into the occipital bone, or back part of the head, about an inch of the spinal

cord is not covered with bone. If a knife or other sharp instrument were driven down at this point sufficiently to penetrate it, it would cause instant death. By bringing gentle but firm pressure upon this part, we have one of the most safe and reliable methods of subjection known. It is, however, like the other methods, especially fitted to a certain class of disposition and habit, not infrequently making it easy to subdue horses upon which the other methods have failed; such as nervous-tempered, courageous, strong-willed horses that will not bear excitement or any freedom that would heat the blood. It is a method of treatment that must be used with great care and judgment. It is easy, of course, to put on pressure, but the point is to use it on cases for which it is suited, and adapt it to conditions. Not enough pressure, or applying it carelessly, would cause failure, while too much pressure, or if continued too long, would not only be abuse, but dangerous to life.

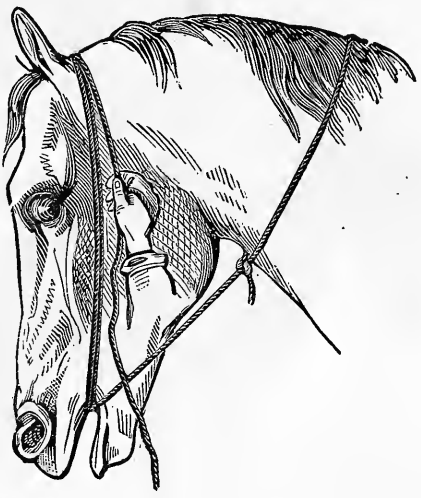


FIG. 43—Method of applying the cord to put on pressure.

I found by experience that by pulling sharply upon a horse with the "Second Form of War Bridle," which brings the force of the pull upon this point, would often so unnerve and break up his confidence that, though previously he could not be touched around the feet or body, he would now submit to it unconditionally. Also putting

the center of a cord under the bridle so as to rest upon this point, and bringing both ends through the rings of the bit and carrying back for reins, would usually make the horse drive in a short time to a slack rein.

Fig. 44.—Holding cord when through the mouth.

I was not, however, led to make any special effort to study out the key of this principle of subjection until in a chance way I heard of a man who, in breaking colts brought a cord moderately tight two or three times around the head. This, with the remembrance of the effects before referred to, led me to experiment carefully with a cord in this way, but found it gave but little more power of control than a common war bridle, and I abandoned its use. At the time, I carried canvas, visiting only large centers, which gave me all the opportunity I wished for using the First and Second Methods, and I rarely found a horse that would not submit to these methods. One day, however, a vicious, kicking mare was brought in that resisted my regular treatment; for, once warming up in harness, she would kick in spite of all that could be done. I was led instinctively to try the effect of extreme pressure, and, without stopping to reason upon the matter, kept on winding the cord until I used nearly one hundred feet of hard, well-stretched cord. I let her stand about fifteen minutes, when upon trial I found her perfectly submissive. I

told the man I did not know what the after effect would be, and if it injured her in any way to report to me. Two weeks later he informed me that she was broken of the habit, and all right. Although this mare had resisted the other methods, she was of the exact temperament to submit easily to this treatment.

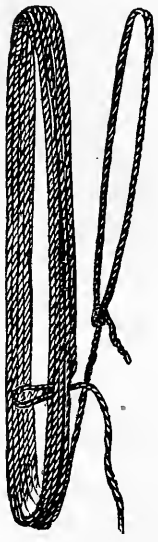


FIG. 45. — Cord when on.

This success induced me to try the effect of severe pressure upon other cases, for the purpose of learning how much pressure should be used, and the limit to which it could be safely carried. I found this to be governed in a great measure by the character of the horse. Ordinary cases could bear a pressure of three cords, or a little over sixty feet, and would submit in from five to fifteen minutes, while some extreme cases of courage and pluck could bear the pressure of a hundred feet or more equally well, and in some very exceptional cases even a much longer time. In one case of a wonderfully tough, plucky mare, as an experiment the pressure was left on nearly an hour, when she fell down helplessly, but upon removing the cord she quickly recovered, and so far as I could judge, without sustaining injury. I learned to use on an average from seventy to eighty-five feet, drawn more or less tightly, and leaving it on a longer or shorter time, according to the resistance shown.

I did not give this method to classes, but held it as a reserve until after my experiments in New-York in 1872. The simplest and best way of applying it is as follows: Take a small, firmly wound, smooth hemp cord about five-sixteenths of an inch in diameter and from twenty to

twenty-four feet long. (Finding it difficult to get cord of the proper size, strength, and smoothness, I have been compelled to have it manufactured for me especially for the purpose, and can supply orders by mail at a reasonable price.) Tie a hard knot at one end, and a loose tie or knot about eighteen or twenty inches from this end. Bring around the neck and slip the end knot through the loose tie as for first form of War Bridle. Stand a little in front and left of the head, bring the cord through the mouth and pass it over the head where the halter rests, pulling down gently; thence through the mouth again and hold firmly with the left hand, while with the right it is again passed over the head and pulled down as before. (See cuts 43, 44.) So repeat to the end of the cord, winding not very tightly. Always use care to bring it over the tongue so as not to tangle or bruise it. Now take another cord and tie to the first one, so that when pulled down the knot will come on either side of the head, not at the top, or in the mouth. Draw this cord as tightly

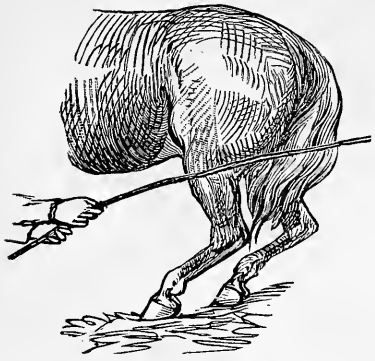


FIG. 46.—Touching the Horse's quarters with pole while the cord is on.

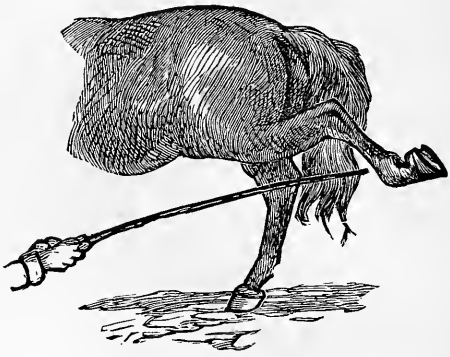


FIG. 47.—Manner in which some horses kick when touched with pole.

as thought necessary for the case, and continue to wind until three or four cords are used, according to the degree of resistance to be controlled. Unless in a small place where there is not sufficient room to run around, attach a strap or cord to two or three of those around the head and hold by it, or tie to a hitching-post.

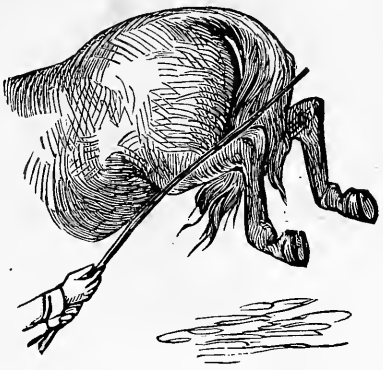


Fig. 48.—Manner in which a vicious Horse will kick when touched with pole.

The principle involved is that the greater the strength of will and power of resistance on the part of the horse, the more cord must be used, the tighter it must be drawn, and the longer it must be left on. In no case, if put on very tightly, should it be left on longer than thirty minutes, while the average time for ordinary cases should not be more than from six to fifteen minutes. It should not be put on carelessly or indifferently, nor should attention be drawn from it one moment until it is again removed.

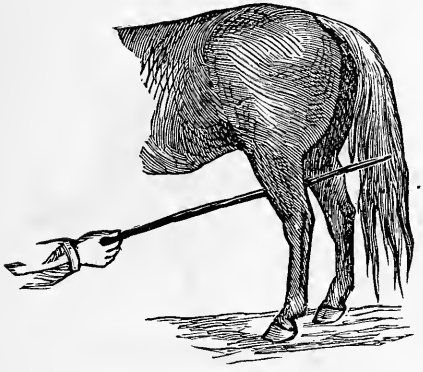


Fig. 49.—Submitting to the pole after being subdued.

Success will now greatly depend upon the advantage taken while using this treatment, as it will practically do no good to put on pressure and do nothing more. For ex-

ample: If a kicker in harness, while the pressure is on take a small pole or rakestale and bring against the legs and quarters, as shown in cuts 46, 47, 48, 49. This will usually be violently resisted by kicking. If after reasonable effort there is not submission to it, it may be advisable to increase the pressure by winding a little tighter or adding more cord.

The central point of observation now should be the

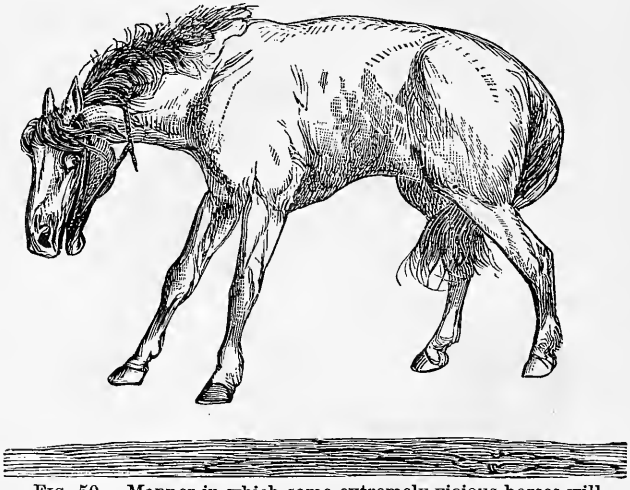


FIG. 50.—Manner in which some extremely vicious horses will resist by jumping when subjected to pressure.

horse's eye. So long as there is fire in the eye and the ears are thrown back, no matter whether the horse kicks or not, it is an evidence that he is fighting hard and the pressure must be kept on. On the contrary, when there is a general ceasing of resistance, the eye softened in its expression as if going to sleep, the breathing accelerated, panting-like, and especially if there is rapid sweating, it is sure evidence of unconditional submission. To keep on pressure any longer would not only be entirely unnecessary, but abusive. These indications are unfailing, and

the cord must at once be removed. Commence unwinding, repeating the poling from time to time, until the cord is wholly removed from the head. Then turn the last cord into first form of "War Bridle," with the control of which any resistance can be restrained. Repeat the poling as before on both sides, and against the quarters, to test his docility, as shown by cut 49.

It is invariably a good sign of submission, when the pressure is removed, to have the horse take a long breath

FIG. 51.—As some desperately vicious horses will throw themselves when subjected to pressure.

and also to sweat freely. The treatment must now be carried out for driving as directed in chapter on "Kicking."

If bad to shoe, while the pressure is on, attach a rope or strap to the foot and pull back and forward, as in cut 55, until submissive to it, and the toe rests upon the ground. The cords should then be immediately taken off the head, and the last one turned into the first form of War Bridle, to be used if necessary. All good subjects for this treatment will resist hard at first, and make a determined fight, but when they do give up, will be found entirely sub-

dued; while those that do not resist when touched while the pressure is on, are, as a rule, not good subjects for it.

This method of subjection reveals the horse's character exactly, whatever it is. If one of great courage and spirit, he will usually resist at first with great fury while under the treatment, but finally submit unconditionally. But if of a sullen, treacherous nature, while the pressure is on he will often stand sullenly, doing nothing. In such cases the

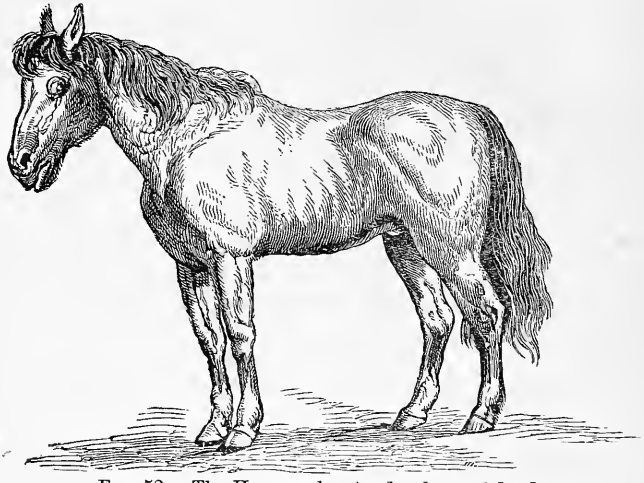


FIG. 52.—The Horse as he stands when subdued.

Second Method must be depended upon, in connection with the other treatment.

The success with which some kickers can be subdued and broken of the habit by this method, is remarkable. It is especially adapted to the subjection of courageous, determined, sensitive horses, that will not bear excitement or heating of the blood. It also works well upon biting, striking, vicious stallions, especially when used in connection with the other methods. It works extremely well upon mules, seldom requiring more than ten minutes to subdue even those of a very vicious character.

Cases upon which it will not work well, and for which it should not be used, are young, unbroken colts, sulky, cold-blooded horses, and, once in a great while, a class of high-strung, sensitive horses of great courage and endurance, that become excited, strike, and resist hard. Such cases are, however, somewhat rare. If it must be used upon such, let it be after subjecting to the First or Second Methods, or both.

FIG. 53.—Mouth as usually kept open when cord is on.

The reason this method should not be used upon colts, is that they will usually resist any attempt to put on the cord, or bite and chew upon it to a degree that will bruise or cut the cheeks, which is very troublesome to treat. (See cut 54.) Besides, colts can be controlled so much easier and better by the Second Method that there is no necessity for using it upon them. There may occasionally be found an old horse that will bite upon the cord like colts. In all such cases the treatment must at once be abandoned, and dependence placed upon the other methods. Those that cut or bruise the cheeks are usually of a surly, obstinate nature, the sullen disposition being denoted by the small, clear eye, set well back on the side of the head, eyebrows rather heavy, fullness below the eye, and small nostrils. When

FIG 54.—Appearance of mouth when biting upon the cord.

excited, they are very sullen, and indifferent to pain or control. I would add that the average of horses will keep the mouth open when subjected to this treatment, without attempting to bite (as in cut 53). In an extensive practice of many years, I have found no means of protection worth the trouble of using.

This method of subjection is so arbitrary that for a long time I have felt unwilling to publish or give it to my classes,

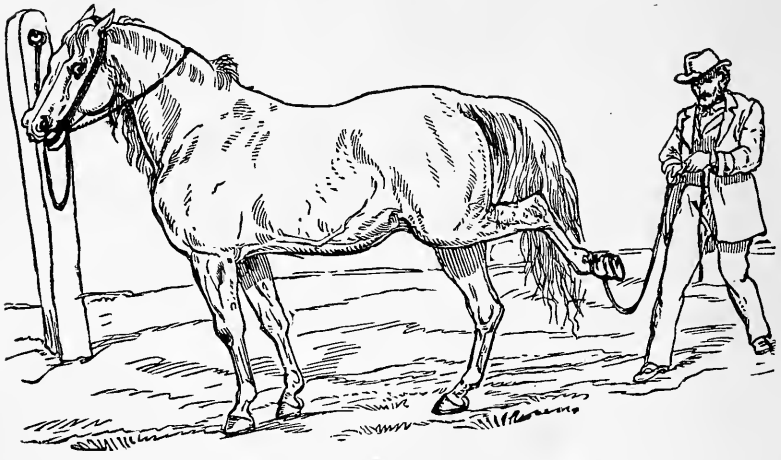


FIG. 55.—Pulling the foot back—bad to shoe.

fearing they would abuse it. With anything like ordinary care, it is not at all difficult to determine the cases for which it is suitable, and to avoid needless abuse by it. When properly used, it is not only entirely safe, but not at all objectionably severe. It is always advisable, before applying this treatment, to look the horse over in a general way. If a nervous, excitable, coltish-acting fellow, that has, perhaps, been seriously frightened by carelessness or accident, the Second Method may first be used. Should this fail, or not produce satisfactory results, then this method may be tried. First bring the cord through the mouth once, and

pull down rather tight. Should this be submitted to, it is safe to proceed; but if he strikes violently, or resists, showing a disposition to bite upon the cord, especially after two or three cords have been used, it had better be abandoned and other treatment used. Or if it is desired to subject the horse to the First Method first, and the rig cannot be put on with safety, subject to the Second Method for a few moments, then resort to the First, after which the impression can be fixed by this.

*Fig. 56. Pulling head of a vicious horse around to avoid his fore feet should he strike, and observing that the cord comes right in the mouth.

*Fig. 57.—Looking at the opposite side to see that the cord comes right, and determining the amount of pressure necessary.

The First Method cannot be repeated with much assurance of success. If the horse will not get up after being thrown, you have accomplished all that it will do. Also

*The above cuts were unavoidably omitted from their proper places in connection with cuts 43 and 44, where they belong.

the Third Method will, as a rule, prove a success or failure after the first trial. But if the horse will bear it, this trial can be carried to a considerable extreme of pressure, and continued for some time, though it should not exceed thirty minutes except in very extreme cases. This I have learned by a long series of careful experiments upon all kinds of horses. The point is to make all the impression possible with it when used, and then, if necessary, resort to other methods.

It is rarely necessary to use much severity in the subjection of colts. The less excitement and punishment used in their treatment, the better. Also in the management of vicious horses, the best proof of skill lies in surprising or forcing them into submission before they become excited. Much extra work and abuse will thereby be prevented. Under no circumstances must there be half-way work. Nothing short of the most thorough and complete submission will answer. Short of this there will be danger, in the future handling or training, of their breaking over and becoming more unmanageable than before.

Control by Whipping.

In chapter on "Colt Training," I have referred to the control of horses by whipping, and I think it advisable to refer to it here more definitely as a method of subjection. If a sensitive, nervous-tempered horse were shut up in a small yard or building, and then suddenly or unexpectedly whipped from behind, and the whipping cease as soon as the horse is disconcerted and frightened, it would certainly do a great deal in the way of controlling him. But this should not be hazarded in the control of courageous, strong-willed horses, especially stallions, as it would be likely to

cause such to suddenly pitch at the trainer. I have frequently found horses so extremely sensitive that punishment of any kind would immediately excite in them the greatest resentment. The most noticeable case in my experience was an English thoroughbred, in Fredericton, N. B. This horse could with care be handled with a good bridle; but the trainer warned me to look out for myself if I attempted to punish him in any way. To test him I put on the War Bridle, and gave him a sharp jerk backward with it, when he jumped directly for me, and I had all I could do to save myself.

The next most marked case was that of a horse I had trained to drive without reins, and had traveled with through Ohio and other parts of the West. Whipping would excite his hostility to such a degree that in training him it was necessary to keep his head tied from me. I refer to these cases to show that such treatment is decidedly objectionable, and should not be employed.

The whip should not be used as a means of subjection, but of punishment. As explained under another head, the skin on the legs and body of a horse is so thick that when he is warmed up, and his sensibilities blunted, the most severe whipping is not much felt by him; so if the horse is one of much courage, and has acquired confidence to fight, he will be likely to resist this treatment.

THE WAR BRIDLE—FIRST FORM.

The War Bridle is naturally the next in order. The first idea of it was obtained from the Comanche Indians. Its first form was very limited and crude, being simply a loop around the lower jaw, the cord put around the neck and drawn down through the loop. With this cord well

back upon the neck, the pulling upon it gave some power upon the head right and left. This is the form in which I found it. The various modifications of its use, as here represented, are the result of over twenty years' constant practice. With a knowledge of its proper application, and a little practice, it will be found a very valuable means of control.

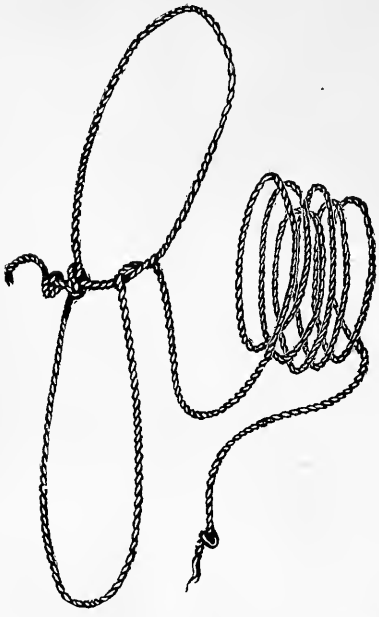


Fig. 58.—First Form of War Bridle.

For the simplest form of War Bridle, take a piece of the very best quality of hemp cord, tie each end into a hard knot, and make another knot or loop about twenty inches from one end. Bring this end around the horse's neck, and pass it through the loose knot or loop, regulating to the size of the neck. Next catch the end hanging down, and pass between the cord and neck forming a loop, with the free end on the near side. Pass this loop through the mouth, as shown in Fig. 59. This we will call the First Form of War Bridle.

Double Draw Hitch Form.

Put on the cord as before explained. Then pass it over the head and back through the mouth, thence through the loop this forms on the near side. (See Fig. 63.) This more than doubles the power of the previous form, and is very important when great power is necessary. If desired,

this can be modified so as to give still greater power by bringing the cord across under the upper lip instead of through the mouth, or by making another loop over the head in the same manner, and bringing it under the upper lip.

Fig. 59.—First Form of War Bridle.

Second Form.

Make a single loose knot or loop about a foot from a knot at the end. Put the end knot through the loose knot or loop, and draw sufficiently tight to prevent its slipping out. The loop thus formed should be only large enough to go over the lower jaw. The larger the loop the less power will be obtained. Next pass the cord from the off side over the head where the halter rests, and down through this loop back of the jaw till the slack is taken up. (See cuts 63 and 64.)

Fig. 60.—Smallest size of cord used—five-sixteenths of an inch diameter.

Fig. 61.—Largest size of cord used—three-eighths of an inch in diameter.

The points of using the War Bridle are as follows: For the First Form, which gives power sideways and back, stand opposite the shoulder and give a sharp, quick pull or jerk, and instantly slack, using more or less force according to the amount of resistance to be overcome. Repeat at intervals of five or eight seconds until the horse will come around, then repeat on the opposite side. In a few minutes the horse will usually come around and follow rather than be hurt by being pulled upon.

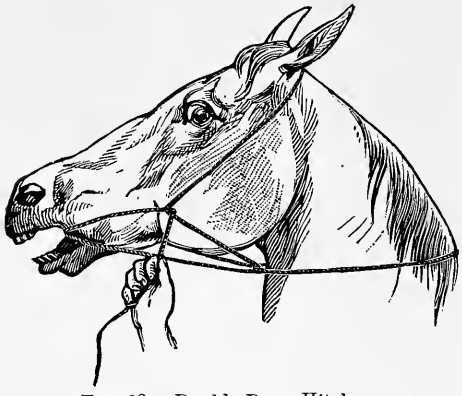


Fig. 62.—Double Draw Hitch.

For controling a horse bad to harness, shoe, etc., after pulling right and left a few times, and while the cord is kept rather taut, the object can be brought gently to the head or back until submitted to. In all obstinate cases it is important that the head is at first held under restraint until successful, giving freedom as there is submission to it. A few minutes' trial will almost always determine whether it will give success or not. If after a fair trial there is still resistance, it must be abandoned for the general treatment.

For the Second Form, which gives power sideways and forward, stand in front, a little to one side, and, as before explained, give a short, sharp jerk, or pull, slowly repeating. Sometimes, if the horse is sensitive and nervous, two or three pulls will be sufficient to make him follow promptly, even running after the trainer to avoid being pulled upon.

But if a cold-blooded fellow that shows considerable resistance, and stands sullenly in defiance of the pulling, after pulling a few times go to the opposite side and repeat in the same manner. This will help to disconcert him, and weaken his resistance. Sometimes the resistance may last ten minutes, or even longer, the horse perhaps, bracing himself stubbornly; but even this should be no cause for discouragement. Simply repeat the treatment slowly, or not fast enough to get out of breath, for when the horse does come it will be all at once with a jump, when in most cases he will be found broken, following and leading anywhere without being pulled upon. In an average case the first pull will usually pull the horse off his feet, and after being pulled upon several times, he will usually follow promptly.

FIG. 63.—Second Form of War Bridle.

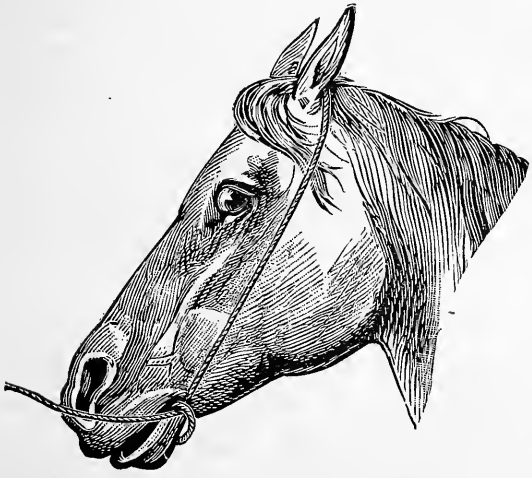


FIG. 64.—Second Form of War Bridle as it should be adjusted.

This is an important point in breaking double balkers,—to first

make the horse come ahead until he will follow without resistance, then, as described under that head, the power of the gentle horse is brought upon him until he will go ahead as desired.

Putting this part over the head, about half way back on the neck, drawing down tightly and tying into a half-hitch, is a good way to keep the head down to bridle, etc., but it should not be kept tied more than a minute or two.

FIG. 65.—Cord too far back on the neck, with loop on the lower jaw too large. Will not work.

(See cut 66.) Sometimes a horse bad to shoe can be made to stand quietly by putting the small loop over the upper jaw under the lip, instead of the lower jaw. Simply pulling right and left a little, and holding rather tight while shoeing, is all that will be necessary.

Another modification is to put on the War Bridle (Second Form) passing the cord across the upper lip and over the head, thence through the loop this forms. (See cut 68.) This will sometimes work very well in controlling a horse bad to shoe, harness, etc.

A word of caution may here be given in the use of the War Bridle. It is important in the management of obstinate cases, to protect the hands from injury, as they are liable to have the skin torn off or blistered, which in the excitement may not at the time be felt.

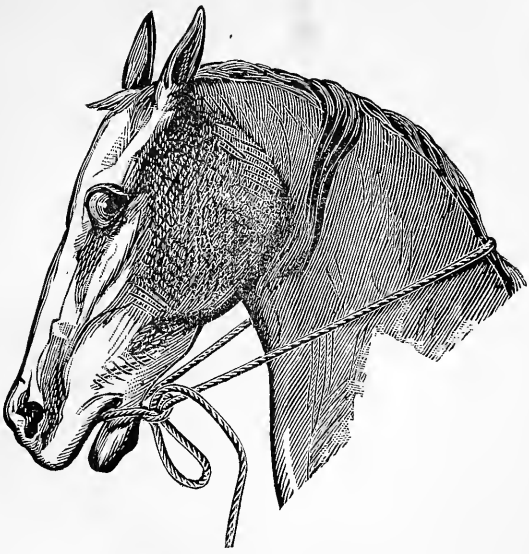


Fig. 66.—Method of tying down to make horse submit to be harnessed, have his head handled, etc.

Many interesting anecdotes could be given in relation to the use of this cord. A popular writer, in explaining the control of horses, says: "If a rope be fastened in the mouth of a horse, and another around the neck, he becomes helpless, and feels his helplessness, and follows his master round and round like a child. I saw this done." This is about as near as most writers can describe what they have no practical knowledge of. No living man could get any idea of the use of the War Bridle from this description.

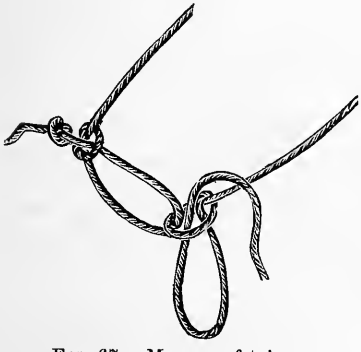


Fig. 67.—Manner of tying.

Several years ago a young man introduced himself to

the writer, and stated that he could break any horse of kicking in ten minutes, no matter how bad he might be. I told him I would give him one hundred dollars for knowledge that would enable me to control a kicking horse with certainty in that time better than I was then able to do. Assured of this, he came up as if to give me a profound secret, and said, "You take a piece of rope and put it in the horse's mouth and over his neck, then yank him with

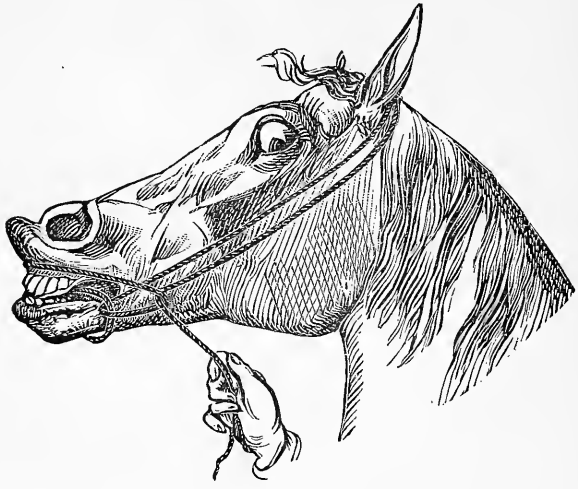


FIG. 68.– Modification of Second Form.

it, and in ten minutes you can't make him kick." I had been through that country years before teaching classes, and the young man had got a crude idea of the War Bridle through some of my scholars. His success in controlling some ordinary cases with it, gave him confidence to believe that he could break any horse.

A gentleman who once attended my class, upon meeting me years afterward, said he did not practice anything but that cord arrangement. He said that once while visiting some friends, and telling them what he had learned to do,

after some bantering and making a wager with one or two of them, he trained a young horse in a few minutes with the cord so that he would follow him anywhere, even into the house. He said he told them he would take the horse to the top of the house, if they wished. His friends were much surprised, and satisfied at the result of the experiment. Said he, "They actually thought I could make the horse follow me up the ladder if I wished."

The simplicity of this form of control makes it difficult to realize its value; neither is it too much to say that it requires a great deal of practice to use it with decided advantage. If limited to the various forms of the War and Patent Bridles, one could drive and control more than half of the average of vicious horses in the country. When properly used, the ease and quickness with which a colt or horse can be made to follow is surprising, particularly by the First Form. This form is especially adapted to controlling by the head and teaching to follow, such as headstrong stallions, and lunging, headstrong horses that have learned to pull away. Also for controlling horses bad to shoe or bridle, and such as will not stand to be harnessed or cruppered, or refuse to have the collar put on. It may be used for ordinary cases afraid of the buffalo-robe, etc. It will also break a cow that kicks while milking. The Second Form is just the thing for the management of balkers, as explained under that head.

I used this bridle ten years before knowing how to bring out anything like its full resources. Indeed, it was only after thirteen years that I learned the Double Draw Hitch Form—a modification alone that more than doubles its power. In fact, we were constantly developing more and more, to the very last of my practice, the great value of this simple means of control.

"W," or Breaking Bit.

The Breaking Bit is one of the most simple and effective means of making a hard, unmanageable mouth flexible to the restraint of the bit that I know of. It has been the growth of many years' practice, and as will be noticed in other parts of this work, some of my greatest feats in the control of headstrong, runaway horses were accomplished by means of it. It is not a bit for driving, though it may in some cases be used as such. The secret of its success is not so much in the bit as in the manner of using it, which

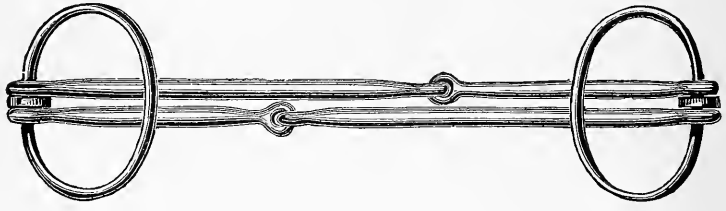


Fig. 69.—W, or Breaking Bit. Half size.

in principle is practically the same as that given for the War Bridle. As explained in the use of the cord, there may be at first the most determined resistance to it; but by repetition of the treatment the horse will in a short time not only cease resisting, but will follow anywhere. The impression made in this way is never forgotten, and the horse will afterward lead by the merest restraint of the halter.

In the same manner when there is at first an effort with this bit to control or force the submission of a headstrong horse, there may be at first the most desperate resistance to it; but by repetition of the treatment there will in a short time be such complete submission to it that the horse can be held or controlled afterward, even under the great-

est excitement, by the lightest restraint of an ordinary bit. This principle of training is also illustrated in "Halter-Pulling," and in fact in every step of subjective treatment.

The length of the bit should be regulated to the size of the mouth, so that when pulled upon, the bars will come at right angles with the jaw on each side. The average length is eight and three-fourths inches from center to center of ring-holes when put together. This makes the length of small bars three and three-eighths inches, and long bars five and five-eighths inches from center to center of holes. It may be made much shorter, but it would proportionately lessen the lever power of the bars upon the jaw, which is the key of its success. It should be made of round cast-steel rod about five-sixteenths of an inch in diameter. (A good illustration is given on a scale of one-half size.) Between the bars at the ends, there should be a small, thin washer. It must be finished smooth, with no rough corners or surfaces anywhere. Sometimes a round, stiff piece of leather may be put inside the rings, but this is not necessary.

A great variety of bits are made on this principle, but their construction is so faulty they do not work well. They are mainly defective in being too short and rough. This bit will not bruise or cut the mouth. Some of the points which it took me a good many years to learn, were, that there was no practical advantage in making the bars twisted and rough for the purpose of hurting more; that the lever power was the point of its success, and that it would work just as well when the bars were smooth as when twisted and roughened.

The point of its use is, when put in the mouth the reins are to be brought back through the shaft lugs so as to bring

a straight, even pull upon the mouth backward, and prevent the horse from turning around. While he is standing or moving, according to circumstances, after giving the command to back or whoa, give a sharp, raking jerk upon the reins, and repeat at short intervals. In all ordinary cases the submission will be quick and easy; but in plucky, bad cases, the resistance may be very determined. In fact, in many cases the resistance may be so great that it may seem impossible to make the horse yield; but this should not discourage. Perseverance will in all cases bring success.

If the horse warms up much, and becomes sullenly indifferent to the pressure of the bit upon the mouth, by repeating the lesson it is rarely he will not be found to submit in a few minutes. At any rate the lesson must be so thorough that there will be unconditional submission. In all my experience I never found more than half a dozen cases that did not submit to one or two lessons. The point is to persevere, repeating, if necessary, until there is success.

More extended details in the application of this bit will be found in chapters on "Colt Training," and "Running Away." As training the mouth by this bit is not always desirable on account of the work of doing it, and the lack of skill and practice in using it, I include other forms of bits which will enable the control of horses more directly and with great success: 1. The Four-ring Bit; 2. The Half Moon Bit; 3. The Spoon Bit; and 4. The Patent Bridle.

Four-ring, or Upper Jaw Bit.

In controlling a horse by the head, we find that one of the most sensitive parts of the mouth is the roof of the up-

per jaw. If we take a common snaffle bit and slide two rings over the mouth-pieces, and connect them by a strap passing loosely over the nose, when the reins, which are attached to the outside rings, are pulled upon, the center of the bit is forced upward against the roof of the mouth.

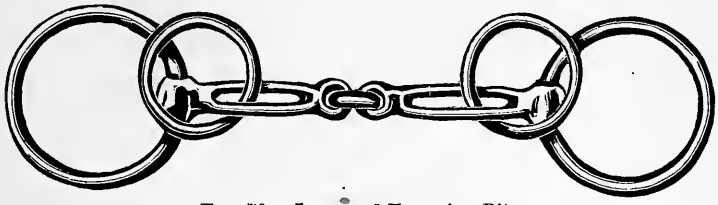


FIG. 70.—Improved Four-ring Bit.

This produces such acute pain that but few horses can pull against it for any length of time.

This bit has been in very general use for a number of years, but I do not know when or by whom it was invented. Frank Leslie, of *Leslie's Weekly*, who witnessed some of my experiments in New York City, told me that

FIG. 71.—Improved Four-ring Bit. Patent applied for.

while in Europe he saw an illustration of such a bit in an old Grecian work. While the bit works fairly well when not pulled upon very hard, its power would be almost wholly lost by the rings sliding to the ends of the bars if the resistance against it were at all severe. To prevent this I devised an obstruction to the rings at a certain point, beyond which they cannot slide. (See cuts 70, 71,) By this improvement the bit will rest easily and naturally in

the mouth, yet be held firmly in place in spite of any degree of pulling upon it.

This bit will work well upon hard pullers and side reiners, especially those that, as they warm up, have more inclination to lug or pull. A horse that will pull so hard upon a common bit as to draw the wagon by the reins, will, in most cases, by the use of this bit submit to an easy rein.

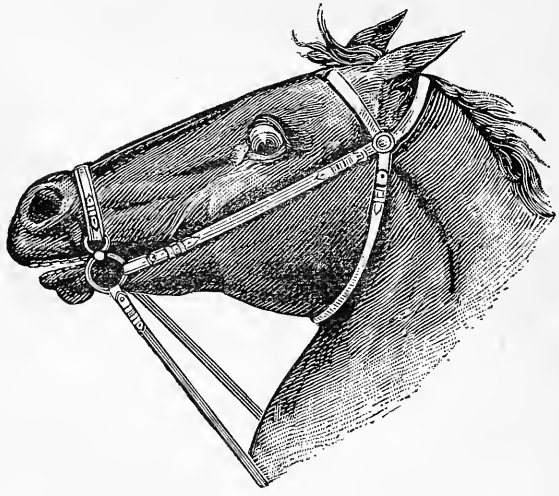


Fig. 72.—Four-ring Bit as arranged for use.

It is also one of the simplest and safest means to make a horse stand to be shod. For this purpose, when the bit is in the mouth, take a common War Bridle cord, tie one end into the near ring, and pass through the opposite ring till taut, and tie. Then bring the cord around the horse's neck as for Second Form of War Bridle, with the cord well back upon the neck, and passed down back of the jaw. This will be found of special value to horse-shoers, because, with rare exceptions, it compels most horses bad to shoe to stand gently while being shod. See chapter on "Bad to Shoe."

It will greatly increase the effectiveness of the Half Moon Bit to keep the head elevated. Indeed, this alone will enable driving many headstrong horses easily. The simplest and best form of check for this is arranged about as follows: Put on a small steel bit partly bent, and pass a closely-fitting strap from each ring across the nose. To keep it in place, another small strap should extend from the center of it to the head-piece. The gag-runners should be attached to the bridle well up on the head-piece on a line with the ears. The check-rein should be attached to this bit, and drawn short enough to throw the head well up.

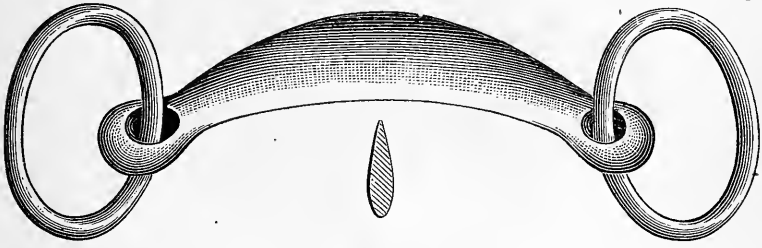


FIG. 73.—Half Moon Bit.

The next point is to so conform the driving bit that it cannot be resisted. This is accomplished by making the part of the mouth-piece coming against the jaw so thin that more than an ordinary pull upon it will hurt so severely that there will be no inclination to pull against it; next, that it be made so circular in form that it will give sufficient lateral restraint to prevent pulling or lunging sideways. The length should be from four and seven-eighths to five inches from center to center of holes, the bend about one inch forward from a line drawn across the center of the holes, with the edge filed down to about the thickness of the back of an ordinary knife-blade, and rounding to prevent cutting. This will make the surface bearing against the mouth so narrow the most plucky horse can scarcely

pull against it. This bit will be found very effective for the management of spirited, pulling, and lunging horses.

Spoon Bit.

The Spoon Bit simply causes sensibility in the mouth in another way, namely, by the pressure of the spurs or flanges against the outside of the jaw to the degree the bit is pulled upon. It will be found in many cases to work

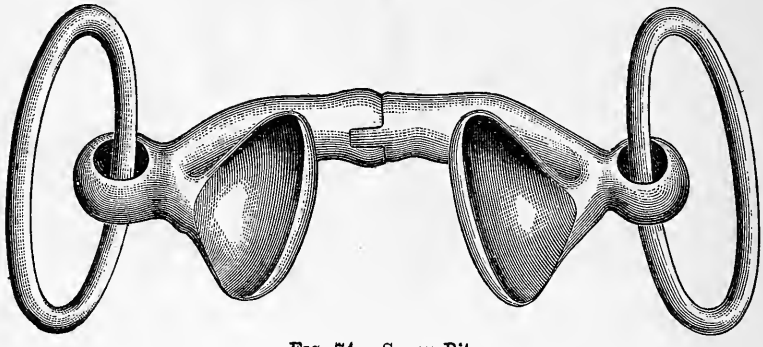


Fig. 74.—Spoon Bit.

very nicely, though it is not a bit that gives much power. It is more like the Four-ring Bit in compelling an easy submission of the mouth to the guidance and restraint of the reins. The illustration will sufficiently explain its construction.

Patent Bridle.

The Patent Bridle is especially adapted for the control of extremely headstrong, lunging horses. It requires considerable practice as well as much hard work to train a horse successfully by the Breaking Bit; also to make a bad puller, or horse having a hard mouth, so sensitive as to submit to the control of an ordinary bit. And on account of the other bits given being frequently inadequate

for these cases to make their management simple and easy, I have invented this means of control.

This is an ordinary bit with a pulley in each ring. A small, oval strap passes under the head-piece of the bridle, at each end of which is a pulley corresponding to those attached to the bit. Tie or buckle the ends of the reins into the rings of the bit, pass them up through the pulleys on the ends of the round straps, thence back through the pulleys in the bit rings. On the ends of these round pulley reins, is stitched a small, strong ring. Another round, extra bit of strong, flexible material (used only for very severe cases) is attached to the main bit. (See cuts 75, 76.) This bridle gives great pulley power up and backward, against the most sensitive part of the mouth, under the upper lip, making it almost impossible to resist an ordinary pull upon the reins. In addition, the fulcrum of whatever power is used being brought, by the rounded strap before referred to, directly upon the spinal cord (as explained in

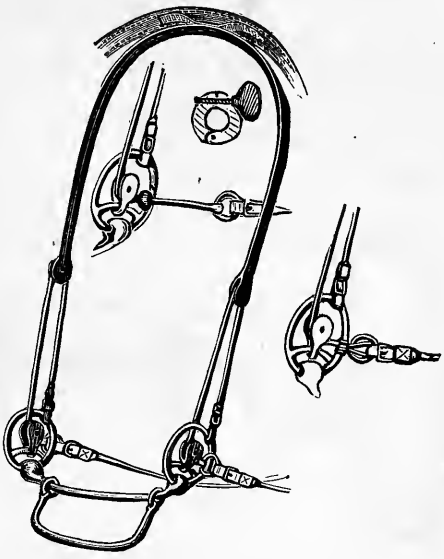


FIG. 75.—Outline of Patent Bridle.

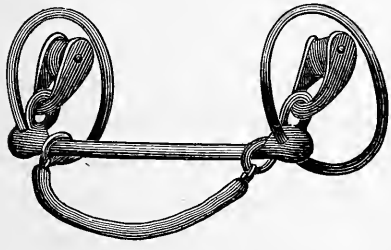


FIG. 76.

Third Method), makes it a direct and powerful means of subjection; so that if there is courage to pull for any length of time, the horse finds himself so overmatched that he will soon cease the resistance, and drive with an easy or slack rein, when the extra bit, if used, can be removed. A rubber connecting the ends of the bit to the rings on the pulley reins makes the action of the bit upon the mouth the

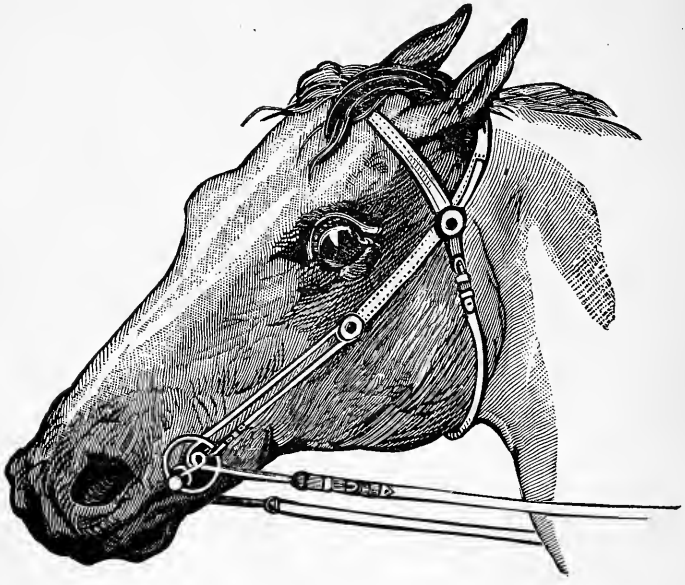


FIG. 77.—The Patent Bridle for headstrong, lunging, runaway horses. Patented Oct. 26, 1880.

same as any ordinary bit. But if at any time there should be much resistance, the rubbers stretch sufficiently to give play to the reins upon the pulleys, which will compel submission,—a very important point in the management of plucky, treacherous horses.

In breaking a horse to lead, simply reverse the reins through the pulleys so as to pull ahead. By catching both reins and pulling sideways and ahead, it will give such pur-

chase that the horse can be lifted right or left, or ahead, with as much or more power than by the War Bridle.

For halter-pulling pass the reins or cord attached to the rings through the ring or hole in the manger, and form the end into a noose around the body of the horse back of the shoulders. The instant he begins to pull, the punishment becomes so severe upon his head that he will soon be afraid to pull. This is the only practicable means for breaking bridle-pullers. It is equally effective for breaking double balkers. For such, the cord is tied to the end of the pole (as explained under the head of "Balking"), when, if he does not go, the gentle horse jerks him out of his tracks.

Foot Strap.

The Foot Strap, properly considered, is but a palliative means of control. It is, however, so simple and practical that I will give it a place here. It is merely to be used in an emergency as an auxiliary to the other methods. Tying up one foot (referred to in "Subjection") greatly disables a horse from resisting. During my early experimenting I frequently resorted to this means in the management of colts. Once having a horse I could not safely control while driving, it occurred to me to attach a strap to the foot and carry it back to the wagon, by which means I could at any moment, while driving, hold the foot helpless. Upon trial the effect upon the horse was beyond my expectation. The sudden pulling of the foot from under

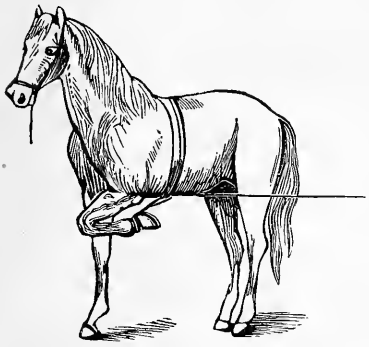


Fig. 78.—Foot Strap.

him had a much more powerful effect in disconcerting and discouraging the resistance than could possibly be done by tying up the foot. A horse can travel but a short distance upon three legs, and if a bad kicker, he is liable to balance on the opposite leg and kick as bad as before; whereas, suddenly holding the foot helpless not only prevents this, but freedom can be given him to move again when desired.

When there is danger of an unbroken colt's resisting control and running away, a strap may be attached to both fore feet, which will of course give power to entirely disable him. Buckle a soft strap around the foot, to which attach a cord or driving-rein, and carry back under the belly-band to the wagon. The belly-band should be strong, and not buckled very tightly, so as to allow entire freedom for the cord or strap to play. With the aid of this alone, when properly used, almost any colt can be easily broken to harness without difficulty. (See cut 78.)

Breaking Rig.

When a colt or horse is dangerous or reckless in his resistance, it is very convenient to control him by means that will require but little if any practical skill, and for this purpose I have invented the Breaking Rig, which will be found a valuable acquisition to the other methods here given.

To break a kicking, runaway horse or colt, all that is necessary is to carefully harness him in the rig so that he will not break loose, and let him go as he pleases. The more he struggles to free himself, or tries to kick and run, the quicker he will be broken, while the trainer can sit quietly behind, touching and poling the horse where sensitive, until he is entirely gentle and submissive. The rig should be constructed as follows: First set an upright post

firmly in the ground. Next have two shaft arms about twenty feet in length so fitted that one end of each will turn upon the post. At the outer end of both of these shaft arms should be fitted a spindle and a wheel from a lumber or farm wagon. Separate the ends of the arms at a distance of eleven or twelve feet, or so that the horse can travel between them without touching either. Next place

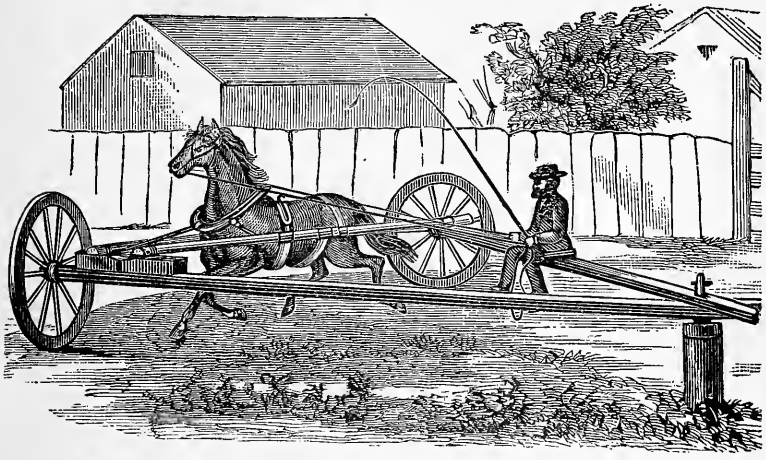


FIG. 79.—Simple Form of Breaking Rig. Patented July 6, 1880.

two bars across from one shaft arm to the other, the inner one about three feet and eight inches from the hub of the wheel, the outer one about two feet from the inside one at the horse's shoulders, and three feet at the quarters, so that an average-sized horse can travel easily between them. Have holes or mortises made through the shaft arms, and the ends of the bars fitted to them. The inner one should be fastened permanently, but the outer one so fitted that it can be taken out and reversed to allow driving the other way. It would be well to have the holes or mortises duplicated so that the bars can be adjusted to fit the size of the horse.

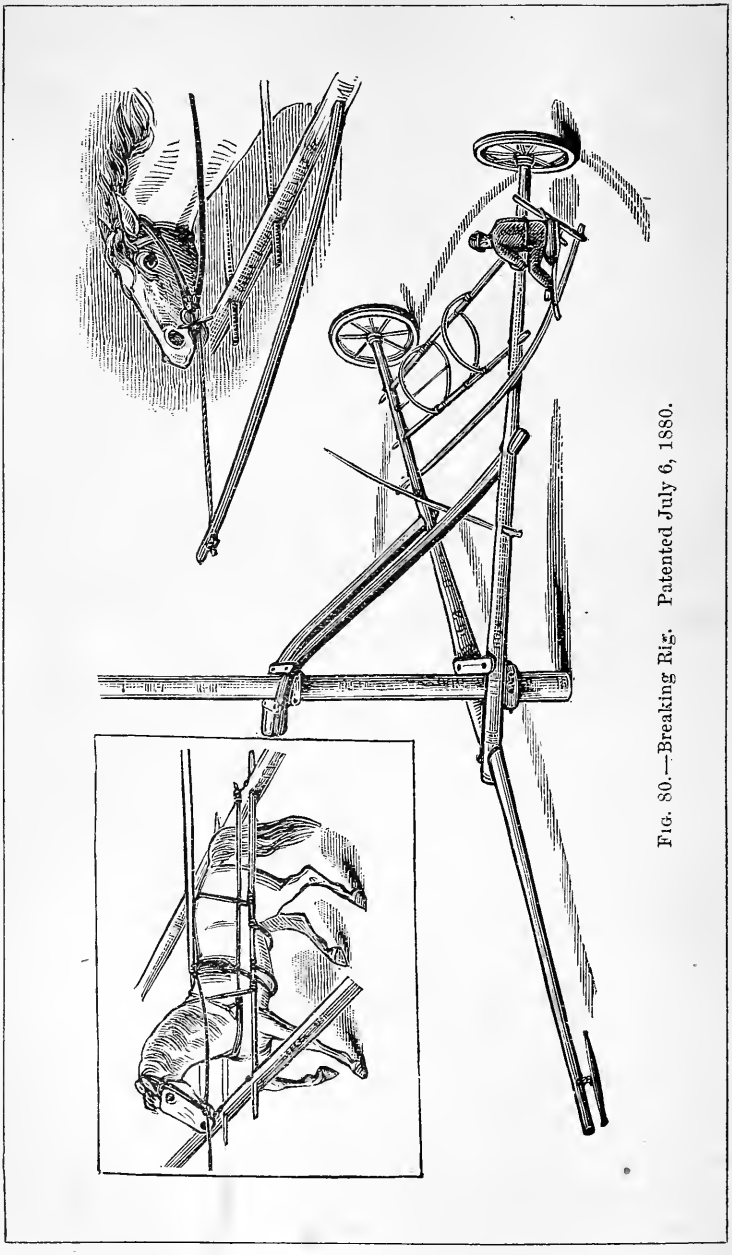


FIG. 80.—Breaking Rig. Patented July 6, 1880.

If the wheels are not high enough to support the frame arms, put an extra piece of scantling on the upper side, and make the mortises or holes high enough to bring the bars where the shafts would come in driving. The simplest way of fastening the horse in the rig is, after he is harnessed in place, to pass a strap under the body from one bar to the other, another over the body and shoulders, and a third over the hips.

No matter how vicious or headstrong a runaway horse may be, the faster and more determinedly he runs in this rig, the sooner he will from necessity become gentle. He has not the liberty to rear up, throw himself, or kick. If he undertakes to run, he is carried in a circle so rapidly that he becomes completely drunk and dizzy, and would fall helpless if not confined and supported. If sensitive about having the head, neck, or hind parts touched, he can now be handled until he is entirely submissive to it. If he is afraid of an umbrella or robe, they can now be brought around him until he is submissive. If he is afraid of a carriage-top, open and shut an umbrella before his face, over, and behind him, until he is fearless of it. If afraid of having the rein caught under the tail, and inclined to run under such circumstances, he can now, with entire ease and safety, be made to submit to it.

Adaptation to Wants.

It is evident to almost any one that all horses are not alike, and that they cannot all be managed in the same way; that there are great differences in strength, intelligence, and disposition. Yet the majority of people seem to entirely overlook these conditions in applying treatment,

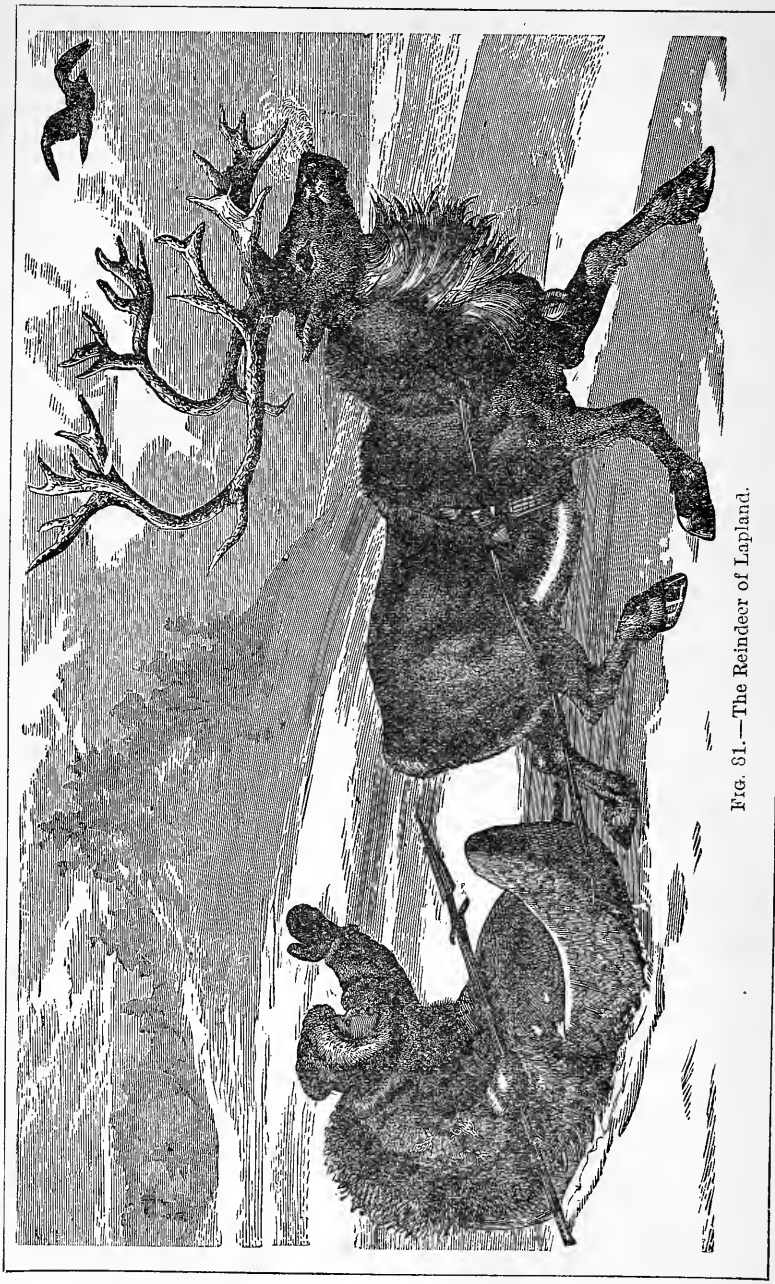


FIG. 81.—The Reindeer of Lapland.

or in putting them to such work as they are by the peculiarity of their nature best adapted.

In the first place, we see there is a singular adaptation in all the domestic animals to the locations and sections of country in which we find them, and to the wants of the people in those parts. In the extreme North, where no other domestic animal could live, we find a dog of peculiar

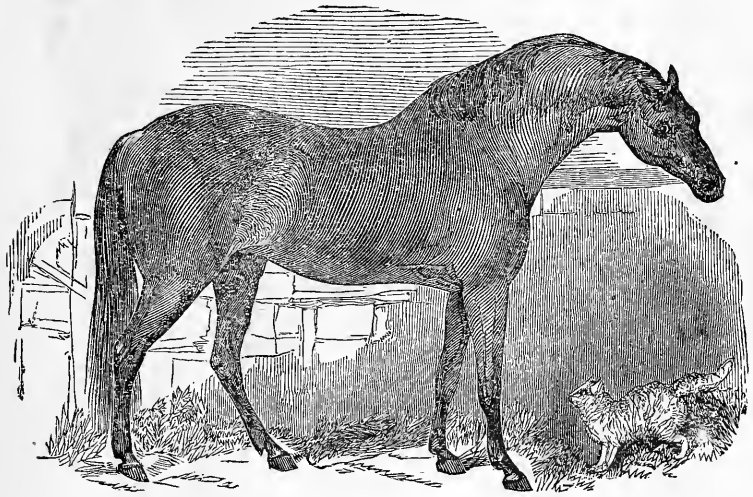


FIG. 82.—The stallion, Godolphin Arabian.

nature, adapted to the wants of the Esquimaux as a beast of burden, fisherman, hunter, &c., and able to subsist on the scantiest fare of fish. A little farther south, the Laplanders have the reindeer, which not only thrives on the moss peculiar to that region, but supplies the people with subsistence in the way of milk, butter, and cheese. He travels with rapidity long distances, drawing a sledge over the frozen ground, easily guided and controlled by the Laplander as he sits behind. His skin makes the best of clothing, while the flesh is indispensable for food.

The Peruvians have the llamâ, or alpaca, which, accustomed to climbing the mountains, carries heavy burdens over the Andes, and furnishes the people with milk for their children and wool for their clothing, as well as flesh for food. The people of the desert have the camel, or dromedary, for crossing the arid, sandy plains. Not only will

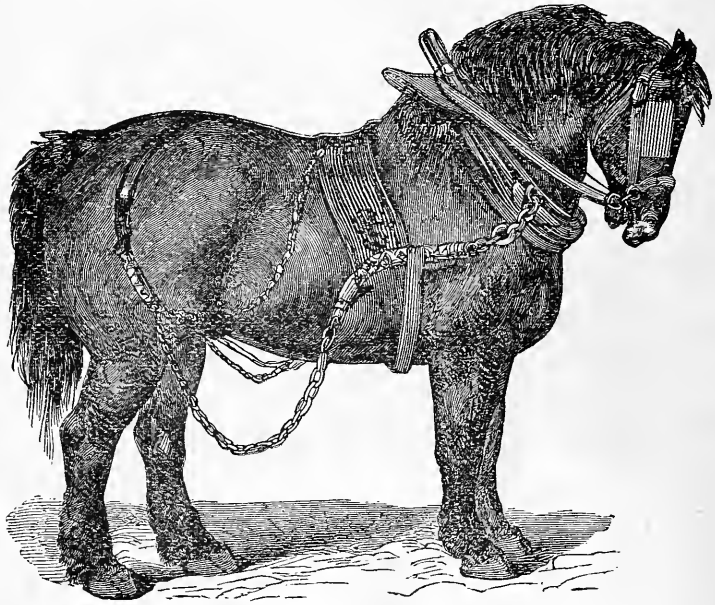


Fig. 83.—A good model of Draught Horse.

he carry a heavy burden patiently, but carries within his body a supply of water to last him a week.

Now we see the same principle of adaptation to the various wants of man shown to a wonderful degree in the horse, by the great modifications in size, strength, and endurance. For drawing heavy loads we have the coarse-grained, heavy, square-shouldered, patient cart-horse. For quick, active exertion, the thoroughbred, or lithe, active race-horse, with oblique shoulders, deep chest, dense text-

ure of body, having the conformation of the greyhound, and capable of running with the swiftness of the wind.

Some are docile, intelligent, and quick to learn; others are dull, wild, or vicious, and more difficult to manage, often reminding of the characteristics of other animals. For example, a horse having small, round eyes, set well back on

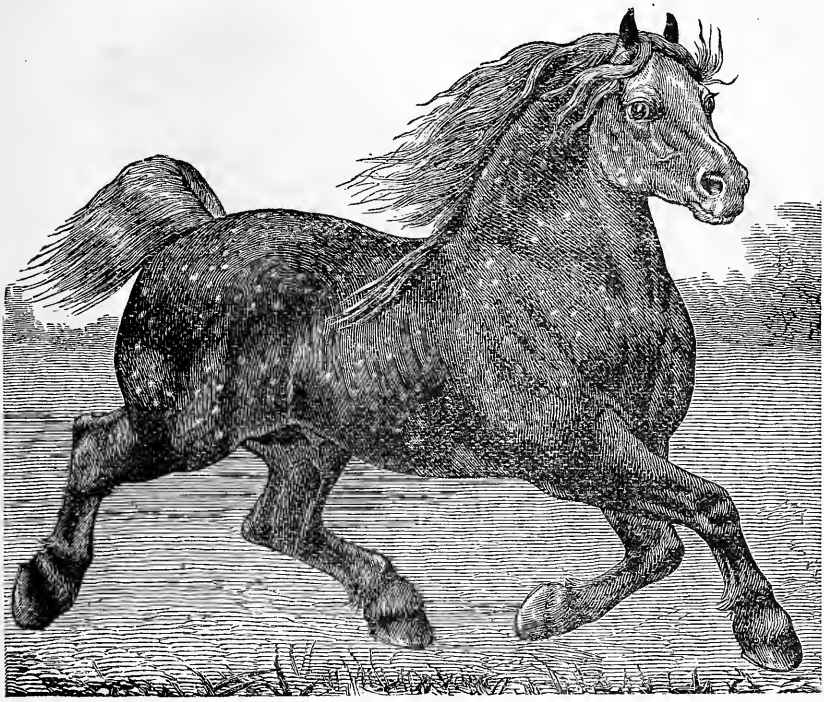


*Fig. 84.—A fine model of the French Norman Horse.

the sides of the head, heavy eyelids, long from eyes to ears, narrow forehead, rounding nose, and small nostrils, will be found naturally obstinate, treacherous, and stupid, reminding of the hog or mule nature. Though sullen and deter-

*Drawing from life of the Norman Stallion, "Vermouht," owned by E. Dillon & Co., Bloomington, Ill., well known importers of Norman Stallions.

mined in his resistance at first, and requiring considerable time, he is not difficult to manage. On the contrary, if the eye be large, clear or dark in color, showing much white, and set well out on the head, long from eyes to ears, ears rather long and heavy, and set well apart, forehead middling broad, and medium-sized nostrils, the character when excited will be vicious, and he will be liable to snort, strike, and kick, reminding of the cat, or feline nature. In this

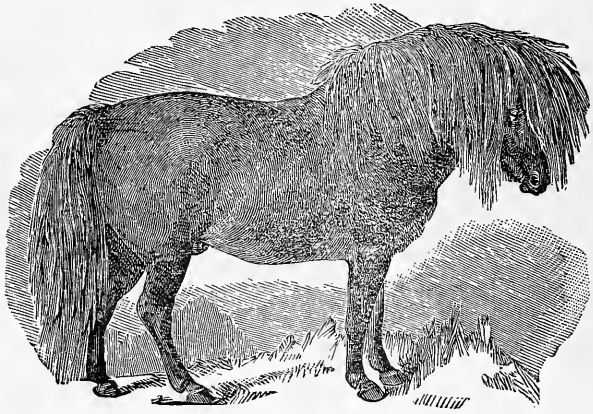


Fig. 85.—The Shetland Pony.

class are to be found the greatest average of vicious horses.

If a horse has large, brown eyes, set well out on the head, eyelids thin, short from eyes to ears, ears pointed and active, forehead broad, and nostrils large, he will be naturally docile and intelligent. If made vicious, no matter how bad, he will submit readily to treatment.

Again, if the horse is one of fine bones, thin skin, small chest, medium-sized stomach and bowels, not inclined to put on flesh, there will be great sensibility and action, but not corresponding endurance. Any resistance usually results from excitement and fear, requiring but little more

than careful, good management. But if on the other hand we find the horse to be heavy boned, with dense texture of body, deep chest and good digestion, there will be greater power of resistance, and more prolonged endurance. The greatest average of the most vicious horses I have ever handled were dull iron-grey, sorrel, or black, and occasionally a bay is equally bad.

In determining character we cannot form correct judgment by studying parts only; it must be determined chiefly by the correspondence of the different parts of the whole body. For example, a horse with long ears, and small, round eyes, may kick and run, but this is no certain indication that every horse with long ears and small eyes is a kicking runaway. The whole body must be taken into consideration, though frequently a very reliable opinion can be formed by a close observation of the head, and especially by the expression of the eye. The "Hillman" horse referred to was in every respect a model in appearance except the eyes, which were snake-like, and the form of the head between the ears, which was very low. He would look at a man pleasantly, and the very next minute spring at him with the quickness of a cat.

Long-continued practice in the treatment of all kinds of horses enabled me finally to determine with great accuracy the exact type of character from the color, kind of eyes, ears, etc., as there is always an intimate relation between the peculiarity of disposition and the physical structure. Indeed, this was necessary to my success, for unless I was able to determine clearly the character of the horse when brought forward for treatment, and know just how he would be liable to act under excitement, I would often be subjected to great embarrassment by having notoriously

bad horses sprung upon me without warning. In fact, it was on account of being caught in this way a great many times that I was compelled to become observant, and when able to point out what a horse would do, and the treatment necessary for his subjection, and then prove it, it became a great point in my favor.

To give some idea of these peculiarities, I include a great variety of heads. But it will be understood that it is impossible, with the greatest nicety of artistic skill, to illustrate the changing expression of even the eye. In the human eye, anger, fear, or affection is clearly marked. Now the horse shows the same peculiarity of changing expression in his eye, and will require the same amount of study to determine his intentions.

The methods given in this chapter are proved to be the most powerful, comprehensive, and humane for the subjection of horses that have ever yet been discovered. They give power to control the whole or any part of the body, so that with reasonable care it becomes a very easy and simple matter to perform astonishing feats of mastery over the most vicious horses. When his intelligence and better nature cannot be reached by kindness, force becomes necessary until a foundation is laid which will allow an appeal to the better nature by kindness. Under treatment by these methods the horse is taken at such a disadvantage at every point that there is but one alternative,—submission. It is science against strength,—man using his ingenuity to neutralize and master brute force.

Now it is seen that the most valuable machine may be rendered useless by bad management; that its usefulness and value depend upon the skill with which it is managed. So the advantages of these methods depend upon the manner in which they are applied. A more detailed explanation of these methods, with a history of the methods heretofore practiced, etc., will be found in the chapter on "Subjection," which should be read in connection with this.

CHAPTER II.

COLT TRAINING.

THE successful teacher aims first to gain the confidence of his scholars, so that he can address their understanding clearly. But were he to transform himself into a danger-

FIG. 86.—Simple way of haltering a dangerous colt.

ous monster, whipping them while talking in an unknown language, indicating by his actions that he would kill or injure them, they would become so frightened and excited

that their first impulse would be, resistance, or a desperate struggle to get away.

Now this is the impression made upon the wild, unbroken colt when hurt, frightened, or excited, in the effort to train and control him, and which in a proportionate degree must increase the difficulty of his successful management. It is important, on this account, that every step in

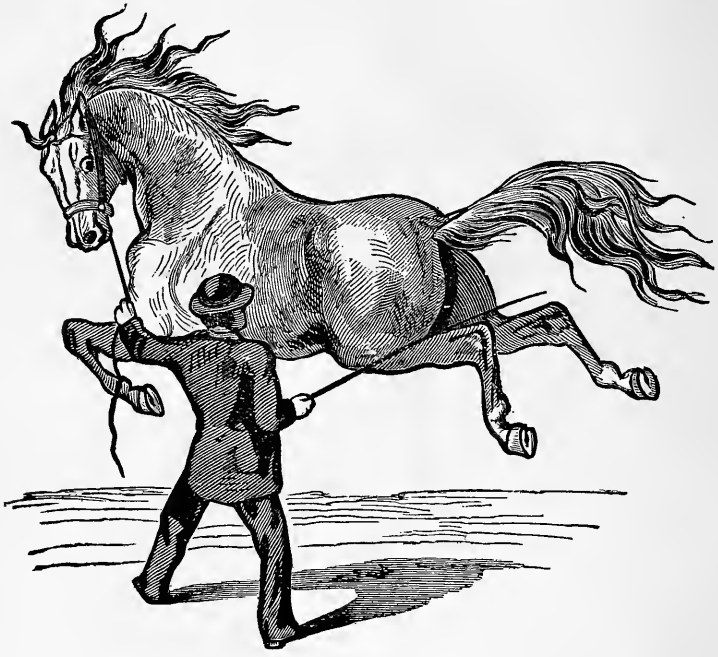


FIG. 87.—Testing a doubtful colt before subjecting to treatment.

the management of these cases be of a character to prevent and overcome fear, when the instruction and training can be carried forward to the degree of the colt's ability to understand, and there is perfect obedience.

HALTERING.

To halter an unbroken colt, first turn him into a moderate-sized room or carriage-house, without stalls or any-

thing which he can run against to hurt himself. It would alarm him too much to try to catch and hold him to put on the halter, and besides, there is danger of getting hurt. This difficulty can be easily overcome as follows: Get a light pole ten feet long, and drive two nails in it about eight inches apart, the first about one inch from the end. Take a common rope halter, and form a running noose with the part which slips through it back about two feet. Hang

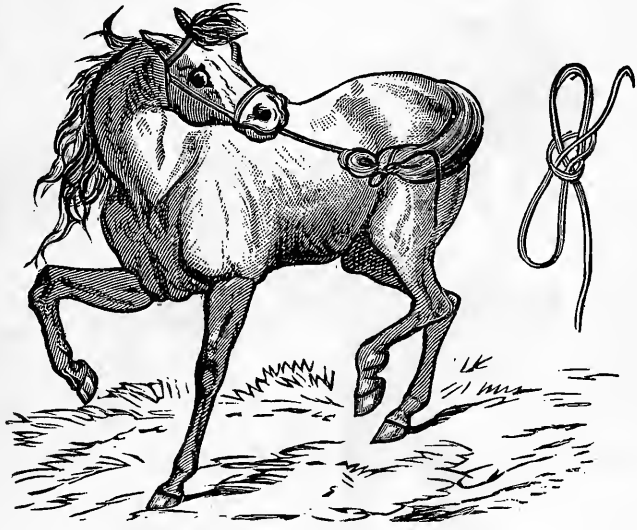


FIG. 88.—About the length the halter should be tied.

the part which goes over the head upon the nails at the end of the stick, so as to be easily adjusted upon the head. (See cut 86.) If the colt is not excited or frightened, as the halter is extended toward him he will reach out his nose to smell and examine it. While he is gratifying his curiosity in this way, bring the slack part under his jaw, the head part over and back of the ears, when by turning the stick half way round, the halter will drop upon the head. Now by pulling upon it, the slack will be taken up and the halter will be upon him securely.

Making the Colt Gentle.

To teach a vicious, headstrong colt to follow, subject him at once to Second Method. Tie the hair of the tail into a knot, and run the halter through above it, drawing short enough to turn the body in a half circle. If at all doubtful about the length, before tying go around with him once or twice (see cut 35), when the length can be regulated to the point desired and tied into a half-hitch knot.

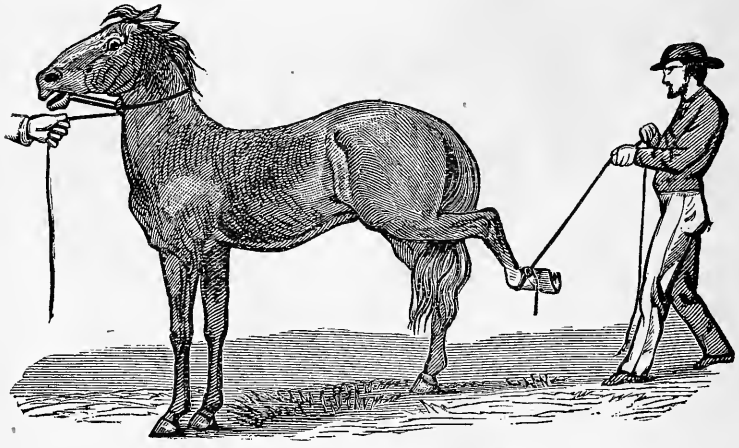


Fig. 89.—Pulling the foot back with cord.

Now bring the pole against the quarters until it is submitted to.

If the halter is tied too long, especially if the colt is a little sullen, he will not move around fast enough to have the desired effect. Or if he is at all nervous and excitable, and tied very short, he will be likely to go around so rapidly as to fall helplessly before the halter can be untied. To avoid possible accident this should be carefully guarded against.

When the colt will submit to being touched on one side or part with a pole, go to the opposite side, and repeat un-

til there is no resistance or fear shown. Some colts will resist very hard when touched, striking and kicking with great fury. This need not discourage; simply force up sharply to the point of helplessness, reversing quickly, and repeating until there is entire submission. It is rare that this treatment will not give success in ten or fifteen minutes. But should the case be one of such extreme viciousness as not to submit, then the treatment must be the same

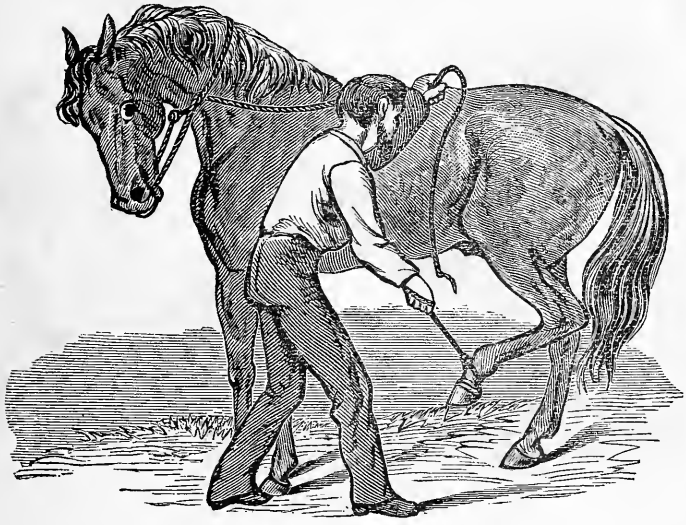


FIG. 90.—Pulling the foot forward.

as for other extremely vicious horses. After submitting, if warm and sweaty, keep handling him gently until cool.

Next, handle the feet. At this stage there should be no difficulty in doing this. If, however, the colt should show an inclination to resist the foot being taken, and it is not desired to push the general subjection farther (for frequently a colt may be entirely gentle as to general handling, and still resist the feet being taken, with much energy), put on the War Bridle. After giving a few quick, energetic jerks right and left with it, let an assistant tie a

rope or strap around the foot below the fetlock, and, while holding the cord rather tight on the mouth, pull the foot back until it is submitted freely to the restraint upon it; then reverse and pull forward a few times. Finally take the foot in the hand and pound upon it.

Teaching to Follow.

Usually after this treatment the colt will lead by the

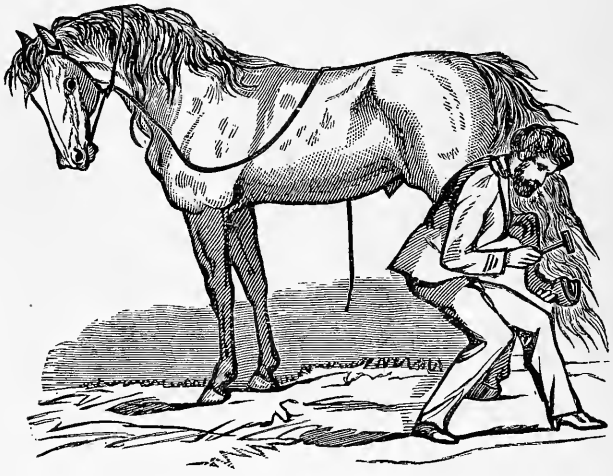


Fig. 91.—The colt as he stands after treatment.

halter freely; but if he does not, put on the War Bridle, First Form, which will soon enable making him do so. Sometimes it is desirable to use the Second Form. Colts of a cold-blooded nature, which are liable to become sullen when heated, will sometimes resist very hard; but by perseverance they always work in, though in some extreme cases it may be best to wait until the excitement is over, and then repeat the lesson. As the War Bridle may not always be available, I will give the simplest method of doing it with a halter :—

If a rope halter is on, tie the running noose back of the

jaw into a knot to prevent it from pulling tightly upon the nose. Stand opposite the shoulder, take a firm hold of the hitching-part, and give a sharp, quick jerk, repeating at slow intervals until the colt will step around promptly; then repeat on the opposite side, gradually pulling more on a line with the body until he will go right, left, or ahead freely. The War Bridle, if available, is much more powerful and effective, and to be preferred.

The following method will also teach a sullen colt to follow instantly, though not so good to make follow by the

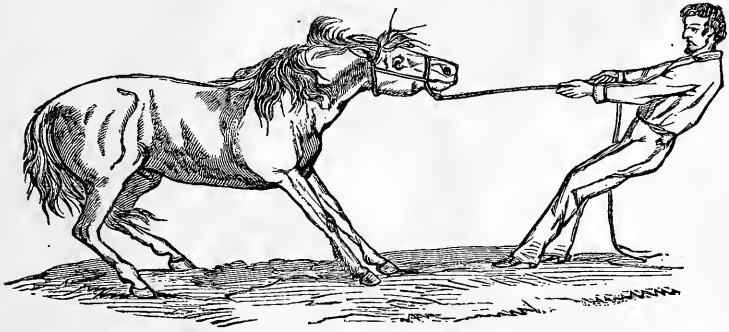


FIG. 92.—Wrong way of teaching colt to lead by halter.

halter, which is the real object to be attained: Take a piece of cord twenty-two to twenty-five feet in length, double, and place the center of it under the tail like a crupper; bring both ends forward, crossing and twisting them once or twice over the back, and knot together in front of the breast. Now catch the halter strap in the left hand rather loosely, and, with the right hand, pull upon the cord with a sharp jerk; this will so excite and frighten the colt that he will jump ahead, and after repeating once or twice, will follow anywhere. Should the colt kick when the cord is pulled upon, it must not be repeated, as it would teach the habit of kicking. At once take it off, and make a noose around the body (as shown in cut),

when it will be found that pulling quickly will so tighten the noose and hurt the back as to make the colt jump ahead in surprise, and he will soon learn to follow promptly. This does not require any skill, and will be found to work very nicely. It will be found especially valuable in teaching young, sensitive colts to lead.

I will give another method of teaching colts to be

Fig. 93.—When pulled upon very hard is liable to rear and throw himself over backward.

gentle and follow without the use of the halter,—a method I practiced with great success during my early experience,—which, when well done, will be found very effective. First, get the colt into a small room or carriage house. The smaller the inclosure the less inclined the colt will be to get away. Next, take a common five or six foot buggy whip, and, speaking kindly, approach him slowly, as he will bear. He will naturally get as far away into a corner as he can, but as soon as you see the least indication of

fear, step back, showing an indifferent manner. When his alarm subsides, approach as before, and so continue to do until the mane can be touched and patted a little. This submitted to, bring the whip from behind you, quietly over his back, until it extends over the shoulder, so that the lash can be brought against the opposite side of his head a little below the eye, and commence tapping with it

FIG. 94.—Right way of pulling to teach the colt to lead.

very lightly, gradually increasing the force of the stroke until the head is moved from it a little, when stop and caress; so continue until he steps around toward you a little to get away from the force of the stroke. By repeating the tapping, and striking a little harder, as he learns to fear the whip he will be forced around in a circle at will. This may be done when the halter is on. If the whip is too limber and the lash too springy and long, it

will be difficult to do this properly, as it will be liable to be brought across the face in an irregular manner, frightening the colt and making him try to get away. Success will depend upon the whip being just right.

The point made of forcing the colt around, step well up to the head and drop the end of the whip back over the hips, touching the part lightly with it, or barely enough to move him, then step forward, when he will come ahead.

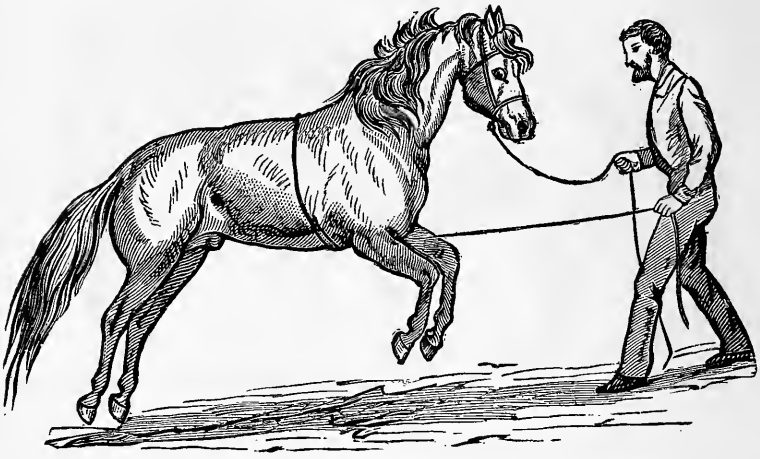


FIG. 95.—Simple method of making a sullen colt follow instantly.

Should he come ahead too far, he can be instantly stopped by bringing the lash to the first position and forcing him around again. Now repeat, not enough to frighten or hurt much, yet sufficient to force him around or ahead freely. It will help greatly to reward with apples, etc. It seldom requires more than five or ten minutes to teach a colt to follow in this way. (The principle is the same in teaching steers or oxen to drive with the whip, with the difference that when it is desired to stop the steer, to prevent him from running ahead, it may be necessary to put on a foot-strap, as explained in the first chapter. The foot-strap

would also be good for the colt, though I prefer, when restraint is necessary, to use the halter.)

During my first visit to Maine, in 1863–4, I advertised, the better to attract attention, that I would take any colt that had never been haltered, and within twenty minutes make him perfectly gentle to lead, ride, and handle. Daily the wildest colts to be found were driven in from the country to put me to the test. In my run through the entire State I did not fail in a single instance, with the control of

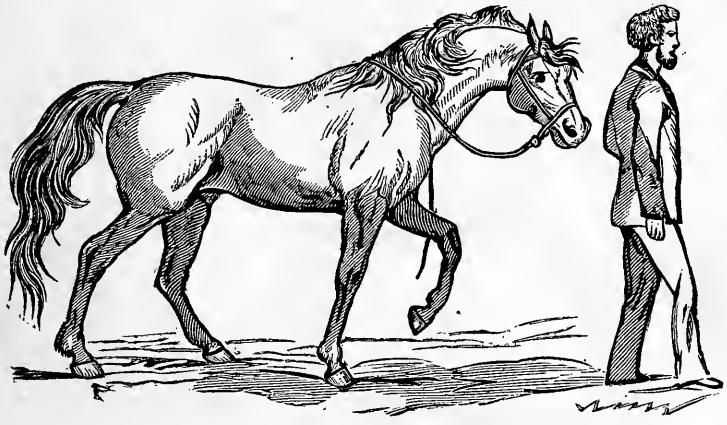


FIG. 96.—The colt as he will usually follow after treatment.

the whip alone, to lead such colts into the open street, with out halter or bridle. The feat was accomplished by train ing as explained.

Another method, which has been practiced by some traveling horsemen, is to turn the colt into a small inclos ure, and whip keenly with a bow whip, around the legs and flanks. This will cause the colt in his fright and pain t run into a corner. As soon as he will turn his head aroun a little, the whipping is stopped and an effort made to reac his head slowly, the hand being held out toward him whil doing so. Should the head be turned away, or resistanc be shown, the whipping is repeated, and this continued un

til he can be controlled. At each inclination to follow, he is caressed; while for running away, or resistance, the whip is applied, until he soon learns to follow to avoid punishment.

There are several objections to this method: First, the horse is greatly excited and frightened by the severity of the punishment, before he can know what it is for, which is entirely prevented by the other methods. Second, if

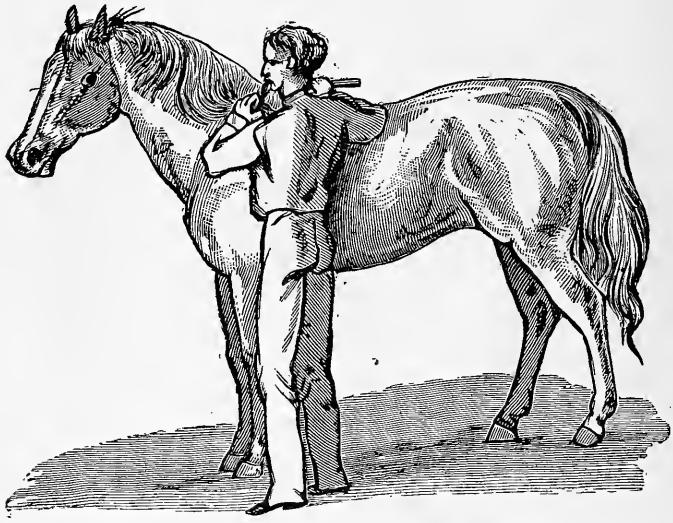


FIG. 97.—Teaching a colt to follow with the whip.

the horse is warm-blooded and plucky, there is danger of teaching the most aggravating kind of kicking, as the intense excitement and pain of the whipping impresses the nervous system so greatly as to weaken and injure it, making what is termed a habit of nervous, switching kicking—a habit very difficult to overcome. The writer has at different times found fine colts that had been treated in this manner by traveling horsemen, and completely spoiled. The other methods are so much simpler, and more humane, that there is no need whatever of resorting to such needless cruelty.

If the colt is not very bad after being haltered, catch the halter up near the head, and go around with him on a sharp walk. At the same time bring the pole (one end of which being well back under the arm) against the quarters. The pulling around will sufficiently disconcert the horse to allow this without much resistance, and he will soon learn to submit, when repeat on the opposite side. It will be still better to put on the War Bridle, and after pulling

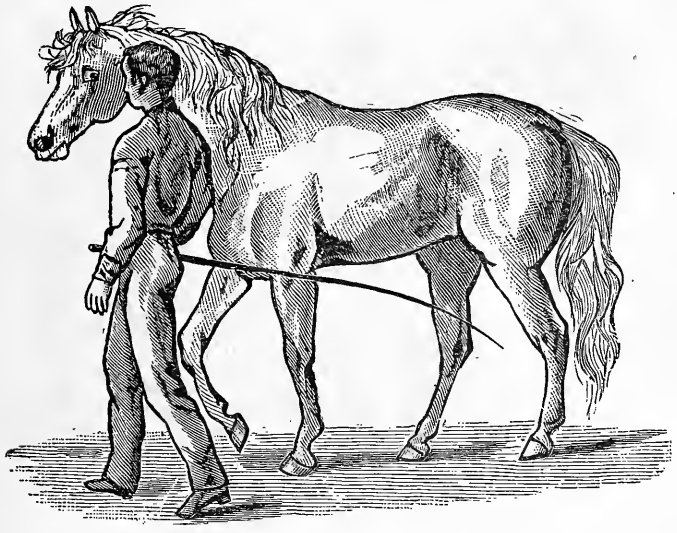


Fig. 98.—Colt as he will follow after being trained with whip.

around right and left, bring the pole against the quarters, legs, and flanks, as before explained. If the colt will submit to this, it is all that is necessary to do, and just as effective as if he were subjected to more powerful treatment.

Driving to Harness.

With the foundation laid of making the colt gentle to be touched, handled, and rode, the course I usually pursue to accustom the colt to drive in harness is about as follows: Put on the harness, which should be so fitted as to rest

easily upon the body, tie up the tugs and breeching straps, and bring the reins through the lugs or shaft bearers. This is very important, to prevent his turning around. Now get behind, holding the reins low on each side of the hips. If he does not start as desired, touch lightly with a whip, and drive around a little, gradually pulling so as to drive him in long circles, and ahead, or either way, freely. If the mouth is hard, and he pulls upon the bit rather stub-

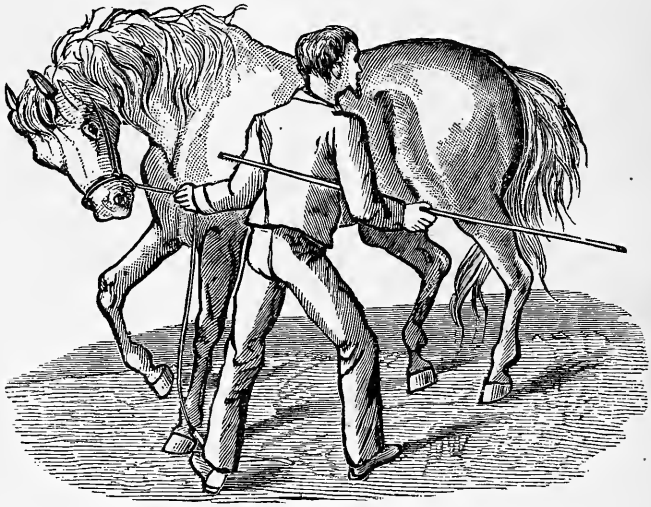


Fig. 99.—Bringing the pole against the quarters.

bornly, the Breaking Bit, if available, had better be substituted. This will give all the power desired.

After the drive, while standing, let an assistant bring a pole against the quarters and flanks until submitted to, then back the horse sharply against a rail or pole so arranged that it will come against the quarters where the breeching or crosspiece of shafts comes. (See cut 101.) The resistance to this poling may sometimes be so serious as to necessitate subjecting again to Second Method, but not often if the first lesson is made very thorough. It will not do under any circumstances to proceed farther, until

there is unconditional submission to this requirement. Then drive around moderately, either stopping to pole, or have an assistant do it gently until it can be done without attracting his notice in the least. A good way is to tie the hair of the tail into a knot quite short, so that a pole passed through the hair above it when pressed against the quarters will strike where the breeching comes. It is very important to have the colt made thoroughly fearless of being

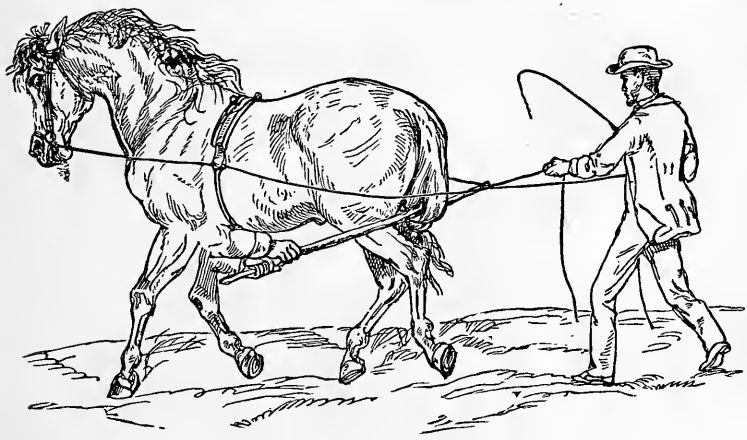


Fig. 100.— Colt when first driven in harness.

touched about the quarters and flanks in this way while driving.

The next step is to make the point of reining, stopping, and backing. After he has learned to go ahead and turn sideways, he can easily be taught to stop. To do this, say "Whoa!" sharply, and immediately give a slight, raking pull upon the reins sufficiently hard to compel stopping, then instantly slack. Usually, the colt will at first try to move ahead. Let him go a few steps, then repeat the command, and, as before, pull sufficiently hard to stop him. So repeat until he learns to stop and stand quietly as long as desired.

Next, stand behind and say, "Back!" and immediately

give a sharp, raking jerk to pull him back a little, and repeat until he will back as desired. Do not force him to back too freely, but just enough to give to a slight pressure of the bit. If there is much resistance to the driving bit, the Breaking Bit may be substituted, but this must not be used so severely as to bruise or make the mouth sore. If he becomes warm and decidedly stubborn at any point, the better way will be to put him away until cool, when, by repeating the lesson, he will soon work in. At this point

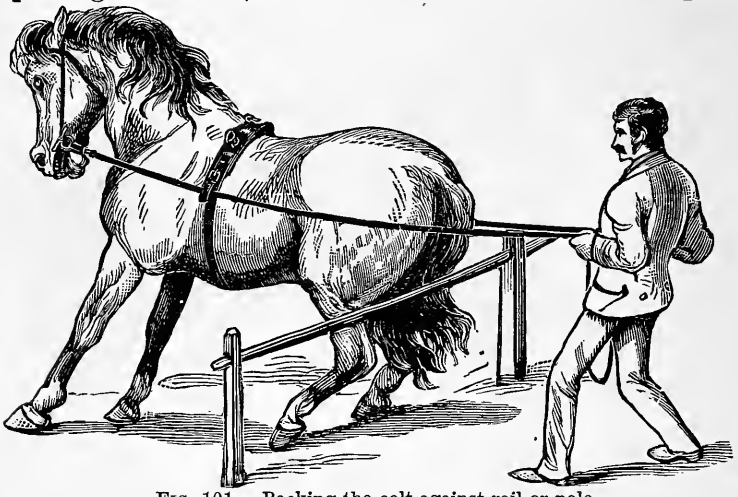


FIG. 101.—Backing the colt against rail or pole.

there is great danger of spoiling the mouth, because when the blood becomes greatly heated, the sensibility of the mouth is so blunted that he will bear having it bruised and even cut to pieces without noticing it. But when over the excitement, it will be so sensitive and sore that he is liable not only to yield to the pressure of the bit too freely, but acquire the habit of running back. Hence the advisability of putting him away until cool, and then repeating the lesson, when the mouth will be sufficiently sensitive to compel submitting freely. If he is given to running away, and resists the bit so hard that he cannot be held, first, over-

come his fear of being touched around the quarters, etc., by the Second Method, then train the mouth with the Breaking Bit until manageable. I advise this training of the mouth, because, when properly done, it enables controlling afterward with an ordinary snaffle bit.

It is not advisable in teaching to drive, to run one lesson into another, especially that of stopping and backing.

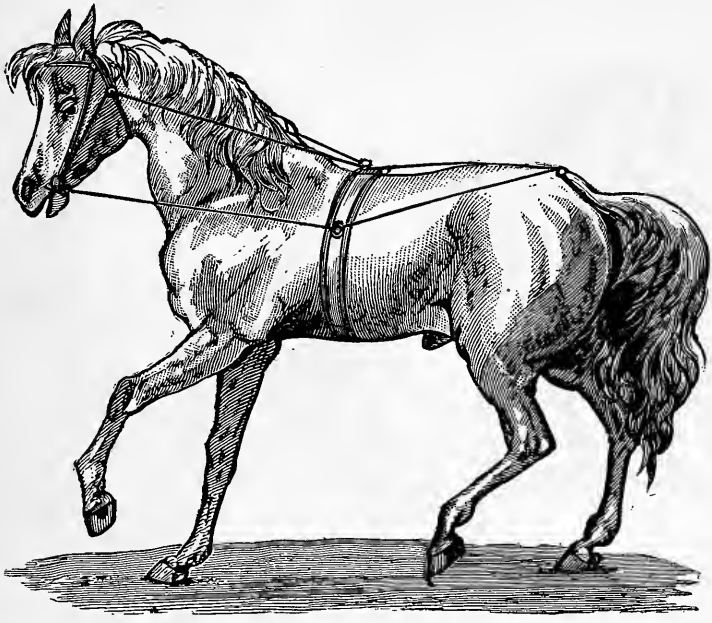


Fig. 102.—Simple form of Bitting-rig.

Backing should be taught very cautiously, so as not to teach the habit of going back too freely—a bad habit.

Bitting.

My course in most cases has been to continue the driving to poles or wagon. But as bitting may be necessary, especially for headstrong colts, I will include directions here :—

Simply put on such an outline of harness as will enable

bringing pressure upon the mouth and holding it there. The ordinary arrangement is a surcingle with crupper attachment, to which the check-rein is connected. This is so common and well understood that it is unnecessary to go into an explanation of details. There are great objections to the common method of bitting, and putting the rig upon an entirely green, wild colt, checking the head up high, and turning him loose in this condition. The colt in his struggles for freedom is liable to get mad, rear up, fall backward, and possibly kill himself. At any rate, the undue confinement irritates and excites him to a needless degree.

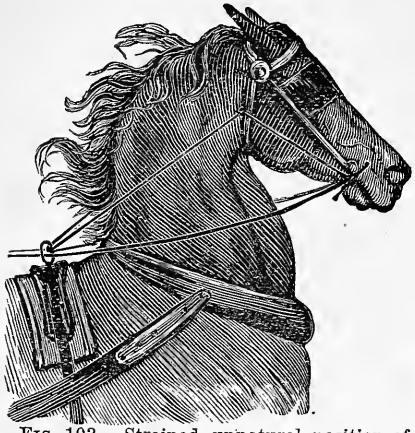


FIG. 103.—Strained, unnatural position of the head when checked high.

The proper course would be about as follows: First, put on a bridle with a snaffle bit, leaving it on until he becomes accustomed to it. Next, put on any simple harness rig, and check at first so as to bring but little restraint upon the head, leaving it on thirty or forty minutes. Next day, check a little shorter, and let him run in a yard in the same manner. At each repetition, check shorter, until the head is brought as high as he will bear.

Another excellent method is to fit a simple surcingle, having loops at different points on either side, and with crupper attachment. Put on an ordinary bridle with snaffle bit and gag-runners. Now take a piece of cord about the size used for War Bridle, and fasten its center, either bringing it over the water-hook, or held by a strap connecting with the saddle-part. Pass the ends forward through

the gag-runners, down through the rings of the bit on each side, thence back through the loops on each side of the surcingle, and tie into the hip ring of the back-band sufficiently short to give the restraint required. The higher the cord is held on each side, the greater the tendency to pull the head up and back, while the lower, the greater the tendency to pull the nose in; so the length and height on each side must be regulated to suit the case. While by this means there is restraint upon the head up and backward, the sliding of the line or cord through the rings and gag-runners gives sufficient freedom for the head to be brought down, thereby easing the weariness of the restraint.

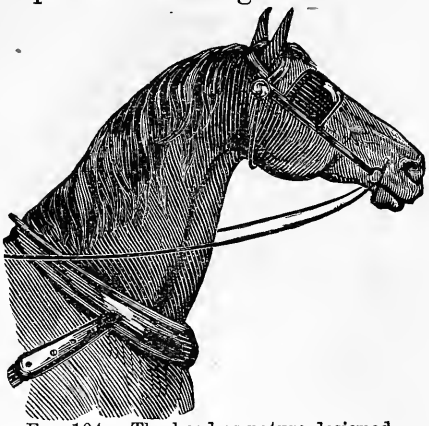


FIG. 104.—The head as nature designed it should be carried.

Training the mouth implies teaching it to submit freely to flexible restraint. Now bitting is only a partial step towards accomplishing this, as it only holds the head to a fixed position of restraint. Not infrequently, when the head is checked high and held there so long as to weary the muscles of the neck, the head is rested upon the bit for relief, and imperceptibly the habit of lugging is learned. Several other bad habits may also be learned by this indirect method of training the mouth; the annoying habit of pulling on one rein, holding the head down when pulled upon, refusing to stand, back, or to rein freely, or refusing to rein but one way when excited or maddened.

There has been practically no remedy for these difficulties, yet they are in most cases easily prevented or over-

come by the simple method of training the mouth with the Breaking Bit.

If the colt does not rein freely, or pulls too heavily, put on the Breaking Bit, run the reins through the shaft lugs and drive around slowly. When the pull is too hard, give a little raking jerk, just enough to break the pull, then slack instantly, and so repeat. Do the same also for throwing the head down, and lugging, which will bring the head up and back. Simply repeat until the mouth submits freely to moderate restraint. Sometimes the horse will fight this quite hard for a time, the same as a stubborn, headstrong horse will resist the jerking or pulling upon the War Bridle in teaching to lead; but by repeating, he will soon learn to submit to it unconditionally. There must be perseverance until the point is made of submitting to the slightest restraint. If necessary, the lesson should be repeated when driving to wagon. It is surprising how easily the mouth is made to submit to restraint by a little training with this bit. (See details of using Breaking Bit under that head in first chapter.)

Hitching to Wagon.

With sufficient control of the mouth to hold the horse under any excitement, the next step is to drive to wagon. As it is sometimes a little risky to do this directly, *driving to poles* should be resorted to first. In fact, I regard this necessary, because it accustoms the colt to being touched around the quarters, backing against the crosspiece, etc., with entire safety. Hitch the colt into these poles without breeching, and drive around, turning right and left, and backing against the crosspiece occasionally to fix the impression of being touched by it.

Before hitching to wagon, all fear of any rattle, or noise from behind, must be overcome. Next, hitch the horse in,

and before attaching the tugs, run the crosspiece against the quarters to overcome all fear of the shafts. Be very particular that the harness is fitted so as not to restrain the circulation, or bring any undue pressure upon any part of the body. In my practice I give the head entire freedom, using nothing but the restraint of the reins, as it tends to confuse and annoy the colt to be needlessly hampered in any way. If desirable to guard against any possible impulse of resistance, attach a strap to the fore foot, by

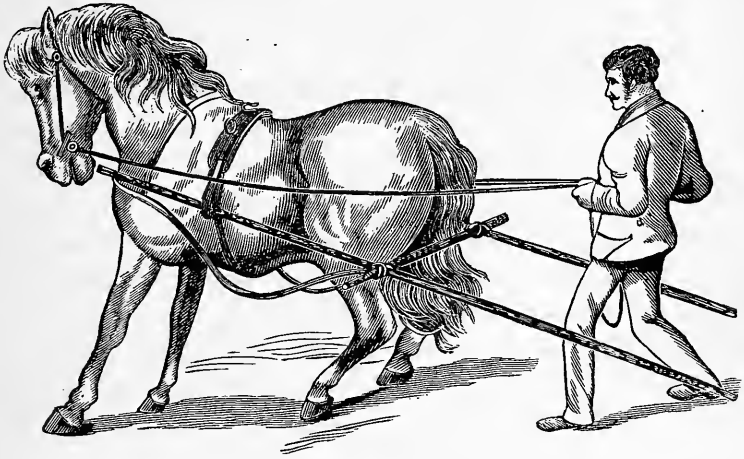


FIG. 105.—Testing the colt by driving in poles.

which it can be taken up at any time. This will prevent kicking. I would also add here that it is always advisable, when the colt is standing in the shafts, before being attached, to shake and rattle the wagon; then move him ahead and pull the wagon behind.

Another point: The colt should always be hitched where the road is wide and level, or in a field, giving a chance to drive around and turn easily. At first let him go any way he will, giving him a moderately slack rein. If the previous work has been well done, the colt will be as gentle, and indifferent to excitement as any old horse.

But if not subdued and made thoroughly gentle and fearless, as before explained, there is danger, in exceptionally bad cases, of his getting frightened and kicking, and thus a great point is lost. It is, in fact, almost fatal to success to let a horse by carelessness or accident resist at any point, as it makes him cunning and doubtful—a condition that sometimes requires very careful, thorough work to overcome.

There should be no effort to make a drive until the colt is accustomed to turning, stopping, and starting, but not to backing; let that come after the going ahead and stopping is thoroughly established, when repeat the lesson on backing a little. At first, the driving should be confined to a walk, then gradually let out to a moderate trot, being careful not to drive to the point of exhaustion. If the colt steps well, and it is desired to cultivate a fast trotting gait, there is more necessity for going slowly. First, let him out on a smooth, moderately descending road, holding up often, and speaking to him kindly. Gradually he can be let out faster and a little farther, but not to the point of breaking, nor so far at any time as to cause fatigue. If it is intended to hitch to top carriage, drive around first with an umbrella held over the head, bringing it over the back. Next, lead him around so that he can look into the top and smell of it, then lead him into the shafts and hitch.

The custom of using blinders on horses, especially as usually put on, in a haphazard way of pressing against and covering up the eyes, is an abomination which should be dispensed with in driving. They are admissible only when the horse is lazy or cunning, watching the whip, etc. Any horse of intelligence and courage will always drive more reliably when able to see around and behind him.

Sometimes a colt, becoming heated and sullen, refuses to rein, or lunges sideways. If very bad, subject sharply to Second Method while the harness is on, following with the treatment by the War Bridle until perfectly submissive to it; then do up the cord and commence driving again. If there is disinclination to rein, drop the reins, untie the cord, and jerk him in the opposite direction until he will come freely, when tie again loosely into the terret, take up the reins, and go on with the lesson. It is very important, in lessons of this character, that the head be not hampered in any way by extra rigging of any kind; nothing should be upon it but an easily-fitting bridle. The harness in all cases should fit easily, so as not to irritate by its pressure or restraint. The lesson is to be continued by driving to poles, etc., as before explained. It may also be necessary to use the Breaking Bit, but this must be used cautiously on colts, as it is easy to make the mouth too sensitive with it, which must be guarded against.

Fig. 106.—Sullen, obstinate colt, as sometimes brought for treatment.

Throwing over Backward.

Sometimes colts acquire the habit of throwing themselves down, or over backward. This is one of the few habits for which there has been no practical remedy, yet when subjected to proper treatment, it will not, as a general thing, be found difficult to overcome. Subject quickly to Second Method, and get him so confused and off his bal-

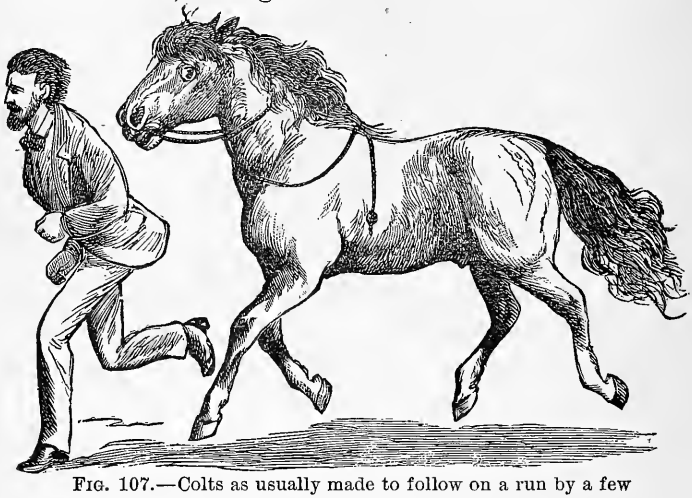


Fig. 107.—Colts as usually made to follow on a run by a few minutes' treatment before the class.

ance that he cannot concentrate his purpose to throw himself. Let the lesson be made sharp, following quickly with War Bridle. Sometimes it may be necessary to use the Third Method; then put in harness and drive around as first explained. If well done, it is rarely the colt will try to throw himself afterward; should he do so, repeat more thoroughly with the Third Method, after which, with the Second, and, while yet confused, drive him around, at first rapidly, then more slowly until found reliable.

These cases have been very common in my practice. By way of illustration I will refer to two cases, one of the colts being sold when three years old for $150. In trying

to break him, he acquired the habit so badly of throwing himself down that it was impossible to drive him in harness. He resisted every effort to break him, consequently, when six years old he was sold for $50. He was brought in without my being informed as to his true character, for the purpose of breaking me down. He yielded readily, however, to the Second and Third Methods, driving anywhere as gentle as desired. The other, eight years old, had resisted every effort to be broken, and had the habit so badly that whenever the reins, or even the halter, were pulled upon a little while leading, he would throw himself down. A horse-breaker, who took the job of breaking him for $25, joined my class at Elyria, Ohio, and brought him in to be experimented upon. In a chance way, when taking him by the halter to look him over, I happened to pull a little to make him follow, when instantly he threw himself over backward. The man thought it a good joke, and laughed, saying, "He is a good one. If you can keep him on his feet while driving, you will break the worst horse that ever lived. I can't break him, and I don't know of any one who can, so I brought him in for you to try your hand upon."

I put the harness on the horse carefully, all ready to drive, tied up the reins so I could take them down quickly, and subjected him sharply to the Second Method. When he became so dizzy as to be at the point of falling, I quickly pulled the halter-strap loose, grasped the reins, and gave him a cut or two with the whip across the hind legs, at the same time yelling "Get up!" to frighten him ahead. He jumped before he knew what he was at, and after a few moments' pushing in this way he could be driven without showing any inclination to repeat the habit. The lesson, though requiring but a few minutes, proved effectual. Occasionally horses of this character may bother considerably. Such are usually of a cold-blooded, sullen nature,

but it is only a matter of a little more care and extra work, to make them work in submissively. It is advisable in all these cases to test thoroughly for two or three days, before driving.

Driving Double.

We first drive the colt double because easier. If this is desirable, subject first to Second Method, making him gentle to be touched around the quarters and parts generally, so that there will be no fear when touched by the tugs or whiffletree. Put on the off side first, because less liable to be excited there, then reverse to the near side.

Hitching the Colt.

In most cases when the colt is taught to follow freely as before explained, there will be but little inclination to try to pull loose when hitched by the halter, especially if the stall is wide, and the hitching part of the halter is left rather long. But as it is the best proof of skill to guard against successful resistance at any point, such precautions must be taken as will prevent it. It must be borne in mind that learning to stand when hitched, above any other condition of training, should be so thoroughly taught that there will be no inclination to pull, even when subjected to the greatest excitement or fear, as from dogs or hogs running in front, cats or hens jumping or flying around the manger, the blowing of newspapers, etc., near the head. The surest and best method for overcoming this fear is as follows :—

Take a large size War Bridle cord of the best quality about twenty-eight to thirty feet long, double it, and make a noose of the doubled end around the body a little back of where the saddle rests. Bring the other ends forward between the fore legs, through the ring or hole in the man-

ger and tie to the ring of the halter back of the jaw. The length must be so regulated that the horse can step around as freely as if tied rather long by a common halter. If there is an inclination to go back when in any way excited, the noose draws so tightly around the body, and presses so keenly upon the back bone, that the colt is at once disabled, hurt, and frightened, so that the first impulse is to jump ahead. A few repetitions will convince him of his inability to pull loose, as well as create in him such a fear of pulling, that he cannot be induced to repeat it. Hitch

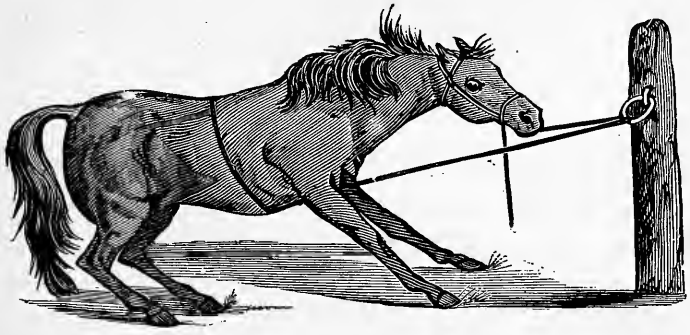


FIG. 108.—Proper method of hitching the colt at first.

in this way in the stall a few times until there is no inclination to pull loose, after which he can be hitched with entire safety, directly by the head.

By this mode of treatment, there is no danger of the colt straining or hurting himself, or pulling himself down—a very objectionable habit—or to pull loose when first hitched. It teaches him to submit unconditionally to the restraint of the halter upon the head under the greatest excitement.

For extended details of hitching by the halter, and halter pulling, see chapter under that head.

CHAPTER III.

EXCESSIVE FEAR.—ITS EFFECTS.

It is quite wonderful to what a degree the nervous system can be shaken or deranged by a sudden fright or intense fear. So susceptible is the mind to this influence

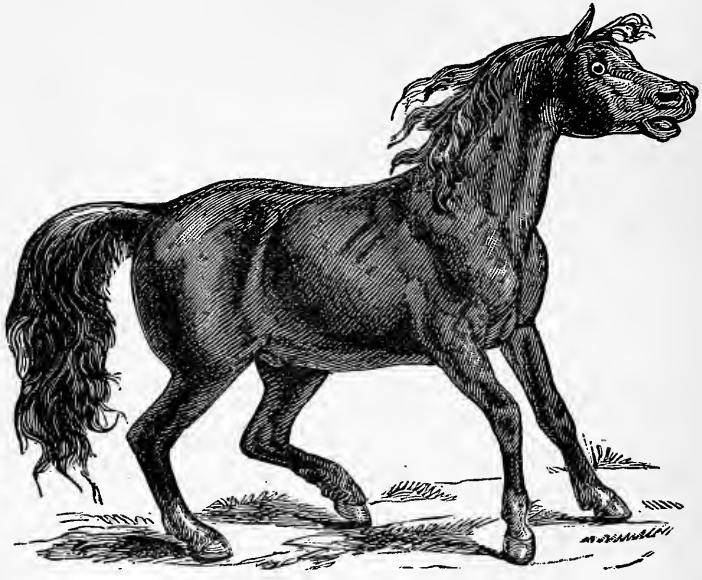


Fig. 109.—The colt excited by fear.

that not infrequently very trifling causes in themselves make such an impression upon children and sensitive persons as to produce convulsions and insanity that may in some cases end in death. Even large audiences are sometimes so panic-stricken by the cry of fire, or some other

cause of danger, as to seem insensible to reason. Under such circumstances, many men and women become so demented that they are most likely to do just what they should not. For example, they will try to save things of no value, and leave valuable property to be destroyed, throw mirrors and other fragile articles from upper story windows, without realizing they must be broken; be unable to dress, or will get on garments the wrong way, etc.

Now the horse is liable to be excited and deranged in the same manner. It is well understood how difficult it is to get horses out of a burning building; and if by blindfolding, etc., they are taken out, when given freedom their confusion and excitement is so intense that they are apt to rush back into the fire. On the sudden approach of a train, or blowing of the whistle, a horse in crossing the track is liable to become so paralyzed that he cannot be forced across in time to prevent a collision. It is not uncommon to have a horse frightened to death in this way.

To illustrate, I will include an account of a few such cases that comprise the record of a few days only:—

"In Rochester, N. Y., the other day, a horse was so frightened at an engine letting off steam that it trembled, and in a moment fell dead from fright."

"At White Plains, New York, a horse was so frightened by a locomotive whistle that he dropped dead."

"Two very remarkable cases of horses being frightened to death occurred in Fairmount Park, Phil., within the past few days. Last Thursday the horse of P. Wallace, of Seventeenth and Catharine streets, became unmanageable, through fright at a train of cars on Mifflin Lane. The occupants of the carriage alighted, and Mr. Wallace undertook to drive the horse off to quiet it, when it dropped dead."

"During Monday the horse of Mr. Zeiss, Ridge avenue and Jefferson street, ran away by fright at a passing steamboat. Guard Ledlie caught the animal, when Mr. Zeiss said he could then manage the horse and started off. The horse went off all right for about 60 yards, when he again ran away and went 15 or 20 feet, when he dropped dead."

Colts or unbroken horses are especially susceptible to fear. Almost every step in their management, as shown in Colt Training, lies in overcoming resistance excited by

fear. It is the principal cause of kicking and running away, as well as many other annoying or dangerous habits, which make the horse partially or wholly worthless for use.

A colt that once had the habit of feeding around and poaching in neighboring yards, was so gentle and indifferent to fear that he could scarcely be driven away. In order to frighten him off, an old tin pail was tied to his tail and a dog set on him. At first he cared nothing about it, but when he started to run, the pail rattled and thumped against his heels so severely that he became frightened, and kicked. The faster he ran, the more the pail rattled and thumped against his legs, and he ran until he was exhausted. As the result, his nervous system was so shaken and injured that afterward the stirring of the grass, or drawing of a stick on the ground behind him, would so excite him that he would scringe, switch, and kick.

Fig. 110.—Nervous, excitable character.

The effect is the same upon a colt or horse, which by some accident or imprudence has been excited to kick and run away while hitched to a wagon. The striking of the wagon against the legs in kicking, makes him think it is the wagon hitting and hurting him, and he tries in the most desperate manner to get away or free himself from it; so the fear, kicking, and running are increased until freed from the wagon, disabled, or caught. Thus the wagon becomes the same in respect to frightening and exciting the horse and spoiling him, that the tin pail was in frightening the colt. The same effect, of exciting and frightening the

horse as by sudden or unexpected contact with objects or sounds, are produced in various ways. Now, as these difficulties are entirely preventable by proper treatment, the importance of understanding and applying it can be appreciated.

A horse's way of reasoning is limited to his experience in seeing, hearing, and feeling. When convinced in this way that an object or sound will not hurt him, no matter how objectionable or repugnant it may have previously seemed in appearance, it will be regarded with entire indifference. It is remarkable also what a degree of insensibility to fear, or how much confidence can be inspired when proper treatment is applied. For instance: Let a pole be brought suddenly or unexpectedly against the quarters of a wild colt, and he will instantly jump, snort, and kick, showing the greatest fear of it. If this be repeated for a few times, the fear, kicking, and effort to get away will be greatly increased. If, on the contrary, the pole were slowly and gently brought to the nose, so that he can smell of it, then passed over the mane and back, gently rubbing the parts, and gradually extending it over the hips and across the quarters lightly, increasing the force of the contact as he will bear, at the same time attracting his attention, and quieting his fear by stroking the head, talking to him, or giving apples, etc., a few repetitions, requiring in all, perhaps not more than ten or fifteen minutes, will make the colt entirely fearless and indifferent to being touched.

FIG. 111.—Extreme of a wild, vicious nature.

I was once present when a team of four horses was harnessed for the first time to a band wagon. With the first note, the horses were excited to such intense fear that it was only by the greatest effort they were kept from running away, though the band stopped playing instantly. I directed the men to get out and go back about fifteen rods. In the meantime, I took the most excitable horse by the bridle, stroked his nose, talked to him quietly, and directed the others to be treated in a like manner. They were greatly excited; the one I held fairly shook with fear. After a few minutes, I directed the band to commence very lightly upon one or two instruments at first, the others afterward to gradually start in. This slight commencement was repeated several times before the horses would bear it without showing great excitement. I then directed them to play louder, and increase the tone gradually until up to the full force of all the instruments and drums. This point made, while playing they came forward very slowly, got in and commenced again in the lightest possible manner, gradually increasing the sound until they played again with full force. I now directed the band to keep quiet while the team was driven a short distance, then, as before, commence lightly and slowly, gradually playing louder until the horses appeared indifferent to the sound. The result was that in less than twenty minutes the band paraded the streets, playing as they pleased, the horses entirely gentle, in fact, appearing to enjoy the music. Here we see such marked excitement and fear shown from hearing a sudden,

Fig. 112.—Docile, intelligent character.

unexpected sound, as to precipitate the most violent resistance, and the contrary of soon quieting down and becoming indifferent to it, by convincing the reason that it would not cause injury.

Understanding these effects, we will now consider conditions. Suppose we wish to accustom a colt to the sight of a piece of paper or a white handkerchief. It is first brought to his nose so that he is able to feel of it, and see it plainly, then rubbed against the head and neck until it ceases to attract attention. If now the operator were to step behind or opposite the flanks, and throw it suddenly behind or under the belly, it would be very likely to excite as much fear and resistance as if he had not before seen or felt it. The difference of position makes it appear a new object of danger to be avoided. Familiarized with it at the head, it should be thrown down carelessly in front, then a little further back, occasionally rubbing it against the head and nose, and so repeating until it can be thrown anywhere around or under the body; this must also be done on both sides of the body alike.

FIG. 113.—Sullen, treacherous character.

A spirited horse that may have been driven for years to a wagon, gentle, would be just as likely to kick and run away should the breeching break and let the cross-piece or whiffletree come against the quarters, as if he had previously known nothing about them. And so in relation to other objects or causes of resistance. This is particularly noticeable in breaking colts, as shown by the fact that mak-

ing one side or leg gentle will not make other parts so; both sides must be treated alike. It is on account of these conditions not being understood (the details of which are given in Colt Training, Kicking, etc.) that so many accidents occur from the use of horses supposed to be gentle and safe. They are gentle so far as they have been broken or accustomed to certain objects or sounds, but when subjected to changes, the impulse of kicking, running away,

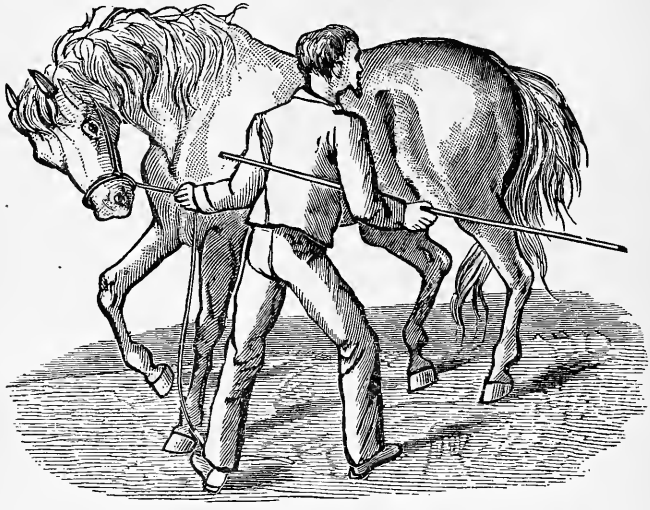


FIG. 114.—Simple Treatment—bringing the pole over the back and quarters until no fear of it is shown.

etc., is as liable to occur as if they were entirely unbroken. Hence we say that the great majority of such accidents are the direct result of ignorance and bad treatment. In breaking colts, as explained under that head, if the trainer is in no hurry, and does not wish to resort to coercive treatment, the confidence of the colt can be easily won by scratching the mane, giving apples, etc. After being haltered, commence rubbing along the back with a pole, extending it down the hips and legs, and giving an apple, etc. Where much fear is shown, bring the pole to the first point and

work again back to that which is sensitive. In this way continue the rubbing or scratching about the hips, quarters, or flanks until no fear of it is shown. Or a short hold can be taken of the halter, and, while stepping around, sharply pull the colt after ; then bring the pole smoothly, but lightly, against the quarters and hips until submissive to it. This slow and direct method of treatment is as good and lasting as when controlled by direct subjective treatment, which is necessary only when resistance is great.

Fear of Rattle of Wagon.

If the horse is afraid of the rattle of a wagon, restrain or overcome his resistance as may be necessary by one or more of the methods of subjection. Next, accustom the horse to being touched on the quarters, etc., with a pole. Put on the harness with Patent Bridle, or Breaking Bit, to insure holding him easily, bring him in front of the shafts, and have some one rattle the wagon until the horse is regardless of it. Now carefully put him between the shafts, and let the wheels and body of the wagon be shaken again ; then drop the shafts upon the ground and repeat. Should the horse at any time try to run ahead, pull him back sharply until he will stand quietly without resistance. Now hitch him up and drive moderately at first, making a noise by a stick running across the spokes, etc. Gradually let out to a trot and run, compelling him to stop occasionally at the command to "whoa." In the meantime, as there is submission, treat kindly. This will not usually be found a difficult habit to overcome. In making experiments before classes on this kind of cases, which were very common, it rarely required more than fifteen or twenty minutes to hitch up and drive such safely, even without breeching.

Jumping out of the Shafts.

To make a colt entirely safe and reliable in shafts, he should be thoroughly accustomed to objects striking against his quarters or legs. It is not sufficient that he is accustomed to being touched around the tail, or even flanks; for though brought to submit to this, there will be no assurance of his being gentle should the shafts strike lower down on his quarters or legs. In my practice I always make it a point, even after the colt is proved gentle, while he is standing between the shafts to pull them against the legs both ways, letting them drop down sharply on the ground, etc., until he is entirely indifferent to their noise or contact. When a horse is not properly trained to this, if the breeching is not unbuckled when he is unhitched, there is danger of his becoming frightened from the breeching pulling the shafts sideways against the legs, and bringing its pressure upon another part. Under such circumstances a horse, if at all sensitive, is apt to become very much frightened, kick, and jump around until loose, and is ever afterward, the moment unhitched, ready to jump out of the shafts. The habit, as a rule, is easy to overcome. Simply accustom the quarters to be touched, and treat practically as before explained.

Top Carriage.

A very little precaution in preventing excessive fear will save a great deal of trouble. In no respect is this more strongly illustrated than in the fear of a top carriage. Because a horse drives gently to an open carriage, it is taken for granted he must know enough to drive to one with a top, and hence the trouble. The horse should first be driven around moderately, the driver carrying over his head

an open umbrella, which appears to the horse like the top of a carriage. It should be shaken around and over the horse's body gently until it does not attract his attention in the least. Now lead the horse to the carriage, and let him feel and smell of the top, and, while doing so, raise and lower it. Then lead him around the carriage, shaking and rattling the top at intervals. Next lead him into the shafts so as to bring the head over the dash. If sensitive, caress and talk to him, and reward as before. Turn the horse around in the shafts, lowering and raising the top until it can be brought up and thrown back without attracting his notice. While the top is up, put the shafts through the lugs so as to bring the horse into position, attach the harness, and start him on a walk or moderate trot, repeating the raising and lowering of the top until it is disregarded, when he can be driven right along.

If an extreme case, it will be necessary to first compel submission by subjective treatment, and getting thorough control of the mouth with the Breaking Bit or Patent Bridle. There must be no half-way work. Make every step sure, and go slowly until the horse can be put in shafts as before explained, and driven without showing fear. This work must in all cases be done out of doors. It may also be necessary to repeat the lesson once or twice, so far as leading around, feeling and smelling of the carriage, are concerned. It is only a matter of a little work and care in this way to make almost any horse entirely gentle and fearless.

Objects Exciting Fear while Riding or Driving.

In overcoming the horse's fear of objects while riding or driving, very much depends upon the treatment. If but partially broken, and sensitive, it will help very much to put him through a course of subjection. Sometimes, horses

so exceedingly sensitive they can hardly be driven with any degree of safety, after being treated are entirely fearless in driving. This is seen in the effect produced by the treatment upon the wild colt. The subjection of "Wild Pete," and other horses referred to at the conclusion of this chapter, are good illustrations of the remarkable effect of this treatment.

If the horse drives gentle, but is afraid of some special object, such as a white stone, stump, sheep, etc., take all the precaution possible against his seeing such things suddenly and unexpectedly. As soon as his alarm is excited, if at all violent, the best way is to stop him, speak encouragingly, and hold him quiet until his alarm subsides, then let him go on, quieting him until the object is reached or passed by.

Many horses comparatively safe are liable to be frightened by suddenly meeting a drove of sheep, load of hay, white cow, sprinkling wagon, etc. For safety, it is better for a few times to get out and take the horse by the head and hold or lead him in part. Particular care should be taken not to expose him to the sudden meeting of a brass band and drums. If he is a crazy headed fellow that seems all right until he sees something and then loses his senses, lunging into the fence, or turning around quickly, there is so much danger of being upset that unless there is certainty of making him thoroughly safe, he should be condemned for such use. If he will keep well up to the bit there should be no trouble in preventing his going sideways by either the Breaking Bit or Patent Bridle.

The Bit gives power in but two ways,—sideways and ahead; so if the horse will not go against it and runs back when suddenly frightened, or turns around quickly, there is practically but very little power to prevent it, except what can be done with the whip and speaking sharply.

Hence the great danger and imprudence of using such horses for single carriage driving.

A Robe.

The sight of a buffalo robe will sometimes excite great fear in a horse. In ordinary cases the fear of it can be easily overcome as follows: While holding the horse by a halter, or War Bridle, which would be better, stand on the off side of the head, and bring the robe up to the right side, so that he can see and smell of it. If this is borne, with a quick jerk-like movement swing it over the head, covering it completely, and go around with him, keeping on either side of the head until he will stop and stand quietly. The first movement determines the success or failure of the experiment. The point is to get it over the head so quickly that the horse cannot see the movement, when the terror of it will almost immediately subside. Then draw it backward and forward, finally pulling it off and throwing it on, and so repeat until it can be thrown over the body or around the horse in any manner.

If there is failure by this method, which is something of a sleight, take the following course: First, get good control with the War Bridle. Next, while holding the horse firmly with one hand, with the other bring the robe gently to his nose, letting him smell and feel of it, when, gradually, as he will bear, bring it up over the head, neck, and body; then stand off a little way, and throw it upon him, and repeat until it can be thrown upon him at a distance of eight or ten feet without exciting fear. Both sides must be treated alike.

No matter what is done, the treatment must always commence at the nose and head, and gradually work back, as before explained. To overcome all fear of the robe, it may be necessary to repeat the lesson several times. If

the robe cannot be brought near the horse with safety by the control of the War Bridle, the resistance must be overcome by First or Second Methods of Subjection. The Breaking Rig, if available, would be still simpler and better. Occasionally there may be found cases in which the intensest fear may be shown, for which the treatment should be made exceptionally careful and thorough. Cases 5 and

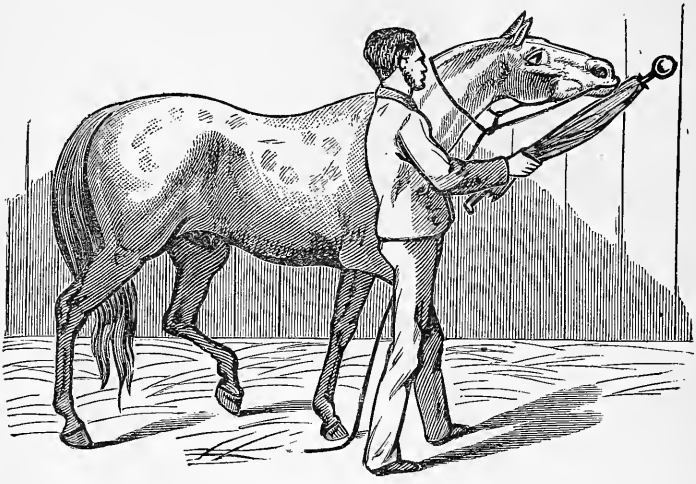


Fig. 115.—Letting colt feel and smell of an umbrella.

7, referred to at the close of this chapter, are good illustrative subjects.

When treated by Second Method, the horse may strike and kick so recklessly as the robe is brought near, it may be necessary to hang it upon the end of a pole to bring it near the head with safety. It will aid greatly to give the horse apples, etc., after submitting.

Umbrella or Parasol.

For an ordinary case of a horse being afraid of an umbrella or parasol, bring one while closed, gently to the nose, passing it back over the head and neck; then open it a lit-

tle and repeat until it can be fully spread and brought over and around the body generally. Now go off some distance, and again approach slowly, and hold it over the head. If, at any point, there is much fear evinced, close it and let the horse see and smell of it, when again repeat the experiment; so continue until the horse can be approached in any manner while swinging the umbrella over the head,

FIG. 116.—Bringing umbrella over the head.

without attracting notice. No matter how well the horse behaves, the umbrella should not at any time be forced upon him so quickly or unexpectedly as to excite him. To do so would endanger undoing the good impression previously made. The lesson should be repeated as for other objects.

SOUND OF A GUN.

If the horse is afraid of the sound of a gun, first, snap caps some distance from him, gradually going nearer and

repeating until it can be done over the body, neck, and head, occasionally patting and rubbing the head and neck with the hand; then repeat, putting in small charges of powder and coming nearer, and so continue until a full charge can be fired over or near the horse, as desired.

Hogs and Dogs.

Sometimes a dog or hog by running under a colt will excite intense fear. If very bad, get good control by subjecting to First and Second Methods, and drive around in harness in a small yard where there are hogs until they will not attract attention. Next, hitch to a wagon, and repeat the driving slowly. These cases usually require several repetitions of treatment.

Railroad Cars.

When a horse has been frightened by a locomotive or train of cars, it is sometimes a very difficult matter to overcome the fear, mainly on account of the inability to control the movement of the cars. The simplest and best course for all average cases will be about as follows:—

Drive the horse around in harness, so far away from the engine as not to excite much fear, and gradually drive back and forth in long circles, and closer, stopping occasionally to give a piece of apple, or something, talking and rubbing the head and neck awhile. Sometimes it may be advisable to use the War Bridle; but, as a general thing, it would be better to teach him confidence by driving around near the train. This should be repeated until he can be driven around, and quite close, without offering resistance. Now drive around to a wagon or sulky; if to a wagon, get one that will allow turning short circles without upsetting. To work surely, it is necessary to work slowly. Of course it will be necessary to have absolute control over the mouth.

In this way a horse can be driven with comparative safety near or about moving or stationary trains. Anything like complicated rigging for the control of such horses will be found comparatively worthless. If the horse cannot be driven with safety after the treatment given, the risk is too great; he had better be discarded for driving near the cars.

It may be asked, how I have been able to make horses so fearless of the cars that they can be led up to an engine, or driven near, with indifference. The course I have usually pursued is as follows: First, get the horse under good control by a course of subjection, usually by the First or Second Method, or both; then make arrangements with the engineer to let off steam plentifully, and rush the horse, with the harness on, into it until completely covered, when he will soon cease to care anything about the noise, etc. If this cannot be done, drive him around, gradually going nearer the engine, until indifferent to it.

Much depends, in the first place, upon getting the horse under good control; second, in the management while in the neighborhood of the engine. A good way, sometimes, is to blindfold the horse and drive near the train until quiet, then let him see out of one eye, gradually moving him around, and let him see out of both eyes. Very much can be done in this way. The horse should be hitched to a wagon and driven at every available opportunity about or near the cars.

There is one point to which I would call particular attention: The horse may appear perfectly gentle after being treated, but when the position is changed, as when taken from a building into the street, or from the street into a building, or if allowed to stand for some time, he will, upon trial, seem to be as much afraid as ever, but upon repetition of treatment it will require only a very few minutes to make him as fearless as before.

Prenatal Causes.

In this connection I would call attention to indirect causes of fear which should be guarded against. For example: A farmer who kept a small dairy had the cows driven to and from the pasture by a trained dog, which bit and frightened one of them severely. A neighbor had a very wild cow, which had been treated gently. Both cows having steer calves, the owner of the wild cow bought the calf raised by the neighbor for the purpose of matching his own to make a yoke of steers. When he tried to train them, he found the one out of the gentle cow that had been frightened, exhibited such uncontrollable fear of dogs, and became so wild when he saw or heard one bark, that he could do nothing with him, and so sold him for beef. The incident was related to me by the owner, who was a member of my class, upon my advancing the theory that great extremes of fear or viciousness were sometimes the effect of prenatal causes.

Soon afterward, in the same neighborhood, a five-year-old colt was brought in to be experimented upon before a class. He was extremely wild and difficult to approach and, as the owner stated, had never been touched or handled by any one. Upon remarking that there must have been some good cause for this, and that usually such extreme fear and sensibility was the result of abuse to the mother, the owner said, "That is true," and then gave me the following facts concerning him: "When the stallion was brought to serve the mare, he acted badly, and was disposed to resist the groom, for which he was taken behind the barn and severely whipped. In this condition, while very much excited, he was put to the mare. When the colt came, he was so wild that no one could get near enough to touch him."

It being impossible, with safety, to go near enough to this colt to touch him, the halter was put on with pole, as explained in "Colt Training," when he was easily subjected to Second Method, by which he was made so gentle and manageable in about fifteen minutes that he was harnessed and driven to breaking-cart, without breeching, acting as well as any ordinary, quiet colt.

A great many cases illustrating the effects of bad treatment at such times, have been repeatedly brought to my notice.

Insanity.

It is not uncommon to find horses insanely afraid of some particular object, as blood, or the sound of the cars, etc., while perfectly indifferent to other objects or sounds. The causes we cannot always trace, though we can see the effects. In all ordinary cases, there is but little difficulty in overcoming such fear by proper treatment, but it is possible to find cases so extreme as to render it difficult, if not impossible, to make reasonably safe. I am satisfied, as before explained, that many of the extreme cases of this character which I have treated, have been the effect of prenatal causes. But the nervous system can be so impressed by direct causes of fear and injury as to destroy life or produce insanity, as shown by reference to several cases in the first part.

This insanity in horses is shown by the intense repugnance to special objects and sounds. Horses that have once been frightened by something giving out, or running against the hind quarters, cutting or injuring them, perhaps severely, are afterward uncontrollably afraid of the noise of the wagon, or the shafts touching the parts. One of the worst horses I ever handled was a small bay, in Vermont, that was perfectly gentle, except being afraid of the shafts touching one quarter. This was caused by the

shaft having run into his quarter. Ordinary cases of this kind yield to treatment in a few moments. Some nervous systems are susceptible to very intense impressions when once excited, and there will be corresponding difficulty in overcoming them. Therefore success must be determined as much by the intensity of the habit, as by the treatment. The success of the treatment will depend upon the directness with which the brain can be influenced; but success in getting up a reaction and changing the character as desired, must be equally the result of the amount of resistance, viciousness, or derangement of the nervous system. These are points which should be studied, since frequently even a minor habit, or apparently trifling form of resistance, may cause a great deal of trouble to be overcome, because of the intensely susceptible as well as positive character of the case.

I include here an account of a few representative cases, out of the many to which reference could, if necessary, be made, mainly for the purpose of showing the remarkable change of character that may be produced in a horse when subjected to proper treatment.

Case I.

When at Buffalo, New York, an eight-year-old sorrel horse, owned by William Press, of Gowanda, was brought as a subject for experiment. This horse when six years old was used to plow corn. The whiffletree coming accidentally against his quarters, so frightened him that he kicked and ran away, tearing the cultivator to pieces. Every effort to work him afterward only intensified his fear. Four or five times in succession he kicked loose and ran away, becoming wholly unmanageable.

Mr. Press was a leading horseman in the town. He had recently taken lessons in the art with a number of

others, and they concluded to try their skill on the sorrel. Five of them assembled on the following Sunday, and worked half a day on the horse, using nearly thirty dollars' worth of rigging. The result was, that after doing all they could, when they tried to hitch and drive the horse, he kicked himself loose, and ran furiously over a mile into the village, with his straps and rigging hanging to him. They concluded now the horse could not be broken, and that he was practically worthless.

FIG. 117.—Press Horse, after being subdued.

Mr. Press brought the horse to Buffalo, and offered to sell him to me. I told him, if he would join my class, I would break the horse for him, as I wanted just such a one upon which to illustrate the effect of the treatment.

"I do not care to join any horse-taming class," replied he. "I have been in a number of them, and can do as much with a horse as any man. I do not want any such instructions, but will sell you the horse."

"I do not want your horse," said I, "but if you will join the class and bring him in for me to experiment upon, I will guarantee not to injure him, and promise if I do not hitch him up and drive him perfectly gentle in twenty minutes, to charge you nothing for instructions, and also to give you the best suit of clothes to be found in the city of Buffalo."

"I will come on these conditions," said he, "yet I know no living man can drive that horse."

He and his friends laughed in anticipation of the sport they were to have in seeing me defeated. They knew, as

they supposed, all about horse-taming, and felt sure this subject would cause me humiliating failure. When he was brought in, Mr. Press got upon the top seat, out of harm's way. At the same time he told the people that ten men could not hold the horse in shafts, and that he felt it his duty to tell them that they must look out for themselves. I told the people there was no danger at all, that the case was in fact a very simple one to manage.

I subjected him quickly to the First and Second Methods, which made him submit to have anything brought against his quarters; this was the first point to be gained. I then obtained control of the mouth by the Breaking Bit, when I hitched him up and drove him, without breeching, perfectly gentle and manageable, all of which was done within fifteen minutes. Next morning, I gave him another short lesson out of doors, testing him hard, hitching and unhitching him in the open street with entire success. The feat was regarded as marvelous. Mr. P. and others who knew the case, said they would not have believed it possible had they not seen it done.

Though the horse appeared perfectly gentle, Mr. P. said he had no faith that he would stay broken, and that he would not ride behind him for any amount of money, and offered to sell him to me at my own price. I bought the horse, and two weeks afterward, sold him in the city where he was afterward used, and proved perfectly gentle.

I will explain here an interesting fact in connection with this case, to show the necessity of treating a horse where in the habit of resisting, and where it is desired to work him: Knowing I could make a great stir in Gowanda by taking him back and exhibiting him there, and anticipating that the horse, though under the most perfect control in the city, would be likely when in the country to show some of his old nature, I arranged to guard against such results

as much as I could by driving there in the night, as doubtful horses always drive better in the night than in the day time. I started about 9 o'clock, and as I had anticipated, upon reaching the country, he acted so badly, showing such intense fear of almost everything he saw, that I could not drive him with any safety. I was, in fact, compelled to get out and lead him back to the settled part of the city, when he at once drove as well as ever. I had broken and driven him in the noisiest and most densely traveled part of the city. There he was perfectly gentle; but upon taking him where he had not been controlled, the instinct of his old fear and resistance became so strong, that to proceed would be at the risk of having him kick and resist control. If subjected to treatment here, his management would have been as easy and simple as in the city. But as I did not care to do this, on account of the difficulty of getting privacy, and which would also require doing the whole work over again, I concluded to give up the project of exhibiting him at Gowanda. My friends never knew the reason of my not showing him there as promised, and will learn it for the first time from this explanation.

A very sensitive horse will always behave better in a noisy city than in the country. The rattle and noise on every side so confuses as to prevent him from concentrating his purpose to resist, or from having his attention directed in any particular direction; whereas in the country the whole attention is attracted to some special object or cause of notice, and excites correspondingly increased disturbance. This condition is specially referred to under various heads.

Case II.

This was an eight-year-old bay, owned in Brookville, Pa. He was of ordinary size, nervous temperament, good

head, strong, dense texture of body, and naturally of good disposition, but had been spoiled by being frightened into running away several times, the last time jumping over the toll-gate and leaving the wagon there. He was afraid of a wagon and could not even be hitched to one. The people did not question my ability to so control him that I could drive him, but would not believe that I could break him so that others could drive him. There was a general impression that I either acted upon the horse's brain in some mysterious way to control him, or that I gave medicine to do so. Some went so far as to say they would not believe it though they should see it done. By great effort, however, I was able to make quite a large class on the condition that I subdue this horse and drive him perfectly gentle before them.

I subjected the case to First and Second Methods, and getting good control of the mouth, not only drove him to wagon down hill without breeching, but at the same time, to prove his perfect safety, had him driven by a boy eight years old, in the same manner. This short lesson proved sufficient to completely reform him.

Case III.

This was a nine-year-old bay horse, owned by Mr. Gates, of Garretsville, Ohio. He would run away in double or single harness, and defied every effort to break him. With great care he could be hitched up, but the moment a whip or the least thing excited him, he would kick and run away, regardless of all control. All sorts of rigging had been tried on him in vain. Although a very powerful, energetic horse, I knew he would not prove a difficult case, and so stated, guaranteeing that I would hitch him up without breeching, drive him before a class, and make him submit to any excitement desired.

Upon trial he yielded readily to First and Second Methods; after which, with the Breaking Bit, I obtained entire control of the mouth, though he resisted for some time with great courage and perseverance. His mouth had become so hard that with any driving bit in use, he could run away with even six or eight men holding on to the reins. In about thirty minutes from the time I commenced, I drove him, perfectly gentle, in shafts without breeching.

I saw at once that I could make a great stir with him at Garrettsville, and so proposed going back there the third time. The owner consenting, I advertised that two weeks afterward I would drive the horse without breeching, down hill through the main street of Garrettsville, while distant from him ten rods, and prove him one of the safest horses in the country. At the time appointed there was a large crowd assembled to witness the experiment, and I performed the feat without any reservation whatever, to the wonder and surprise of all present, enabling me to make the largest class I had yet made there.

It is proper to explain that though the horse had stood idle for two weeks, upon trial I did not find it necessary to repeat the treatment, and did no more than to hitch him up under canvas, and rush him out into the street. The owner was still afraid he could not manage the horse safely, so he wished me to handle him once more. This I did in a field outside of the town, where I subjected him to the most exacting tests. Years afterward, he informed me that he sold the horse to a gentleman in Pittsburg, who used him for a family horse, proving him one of the gentlest and safest in the city.

Case IV.

This was a twelve-year-old sorrel horse, owned by Dr. Keegan, of Cleveland, Ohio. While hitched in the street, and covered with a blanket, he was frightened by the wind

suddenly lifting and throwing the blanket under his body. It was afterward an object of such terror to him that he did not have a blanket over him again for seven years. He would have killed any man venturing near him with one in his hand. When I exhibited one before him, at a distance of twenty feet, he plunged away in the most desperate manner; and after being almost completely disabled, he would squeal, strike, and kick at a blanket held at a distance of ten or twelve feet, his eyes bloodshot with terror. The point was to appeal to the understanding without seriously shocking the nervous system.

I subjected him to First and Second Methods, showing him a part of the blanket, first at a distance of about twelve or fifteen feet, gradually coming nearer as I felt safe in so doing. Even after a treatment that would have compelled the complete submission of any ordinary horse, he was so fierce and desperate that I could not approach near enough with the blanket to make him smell or touch it, without danger of being killed. I hung it upon a pole, and when able finally to bring it against his nose, he grabbed it in his mouth four or five times with the ferocity of a bulldog, but biting less and less each time, until he seemed to care nothing about it, when he submitted to having it thrown over or around him, as desired, entirely regardless of it; and the experiment was pronounced a remarkable success.

Case V.

This was a bay pony, nine years old, owned by a physician at Greencastle, Pa. This horse was afraid of a buffalo-robe. I had a large class of leading citizens, and at the close of the instructions the pony was brought in. Although distant from him more than thirty feet, upon exposing a part of the robe to his view, his terror became so great that in his effort to get away, he broke out of the

barn. When brought back, I subjected him for thirty minutes to the Second Method, without making any apparent progress in overcoming his fear. He continued making the most desperate resistance by striking and kicking at the robe whenever it was exposed to his view. The owner now objected to further treatment, claiming he could not be broken, which was seconded by the class. This was extremely annoying. The usual experiments and instructions had been gone through with, the class entirely satisfied, and at the time this horse was brought in, were engaged in paying their fees. As soon as they saw him resist, they stopped paying to await results of the experiment, which, as explained, was pronounced a failure, and a sufficient excuse for them not to pay me. It was not alone this class at stake, but a failure would be magnified to such an extent as to destroy confidence in my efforts in the surrounding towns.

I asked, "What do you value your horse at?"

He replied, "One hundred and fifty dollars."

"Very well," said I, and put up the amount, which he understood he was at liberty to take if the experiment resulted in the least injury to the horse. I then said to the class: "I want no talk or criticism from you. I insist upon your keeping still and in your places until the result of the experiment is determined. You say I will fail. We will see about that. It will cost you nothing if I do."

As I brought the robe near the horse, he was so desperately afraid of it that he would squeal, kick, and fight with the greatest fury. But my blood was up, and there was nothing for it but at any hazard to see the end. It was a severe struggle; but I was determined to push him now, regardless of consequences, to such a limit of helplessness as would enable me to bring the robe close to his nose. When I did so, he grabbed and ground it between

his teeth, let go, grabbed and bit it again, and so repeated, five times in succession, when his whole nature seemed to suddenly change, and he submitted to it without the least resistance. I now rubbed it gently over his head and body, then untied him and repeated the rubbing, followed by throwing it upon him gently. In a few moments I could stand and throw it upon him without his caring for it. All were now delighted with the result. Every man paid his fee cheerfully. The pony was led home by his owner, who carried a robe over his shoulder dangling before the horse's head, while another was thrown over the horse's head and neck, he being as indifferent to it as if he had never been frightened by such an object. All present voted, "I was a good fellow."

Case VI.

This was a five-year-old colt of a cold-blooded, sullen nature, owned by Mr. J. C. Collins, proprietor of the trotting track in Toledo, Ohio. Though a thoroughly practical horseman, he could do nothing with this horse. The only way he could drive him was by hitching him between two heavier horses, and tying him back to them by the head.

This gentleman was persuaded to join the class, as he afterward stated to the writer, "with the expectation of being fooled." After witnessing the experiments on a number of very bad horses, he came forward, saying, "he had a horse that he would like to see me drive, and would bring him in next day; that it was the only horse he ever had he was willing to take off his hat to, and say he could not break; that if I could break and drive him in the time claimed, he would be convinced I could break any horse in the world."

I found the horse a strong, determined, impulsive fel-

low, very much afraid of anything being brought around or near him, especially of being touched around the quarters or flanks. Subjecting to First and Second Methods compelled his complete submission. His resistance to the Breaking Bit was very determined; but, in time, he submitted to it unconditionally, requiring in all about forty minutes. The lesson was in part repeated next day and he was driven without breeching through the main street of the city.

I append Mr. Collins's acknowledgement published at the time:—

"GREAT FEAT—THE WORST RUNAWAY HORSE IN TOLEDO.

"I certify that a five-year old bay horse owned by me was so vicious and unmanageable that he could not be driven single or double without running away. I tried to drive him with a strong, gentle horse, and he would run away in defiance of all I could do, carrying the other horse with him. The only way we could hold him or drive him in harness was by hitching him between two horses, and attaching a strap from his bit to the hame rings of the horses on either side. It was impossible to hold this horse in any other way. Professor Magner subjected him to treatment in my presence, and drove him in the street, yesterday, without breeching, to wagon, so perfectly gentle and manageable that the slightest command, or pull on the reins, would cause him to stop, allowing the wagon to strike his heels, etc. I have driven him myself since, single and double, and find him perfectly gentle and manageable. I believe a knowledge of Prof. Magner's treatment of the greatest value to owners of horses, and should be learned by all who are wise to their own interests. His system will enable any man to make the most vicious horses gentle with a reasonable effort, and it is undoubtedly the best in the world. I would not take $500 for what I learned from him.

"J. P. COLLINS,
"Proprietor of Track, Toledo, Ohio."

CASE VII.

This was a bay horse owned by a butcher in Rochester, N. Y. A professional horse tamer who had been quite successful in the West was engaged there in business. Happening in the city, I visited him, and during my visit, the horse was led in to be experimented upon before the class. When shown a robe, he exhibited the most intense fear of it. After a treatment of nearly two hours the horse was in reality worse than before, and the experiment was an

acknowledged failure. The man said, "I have n't time to break so bad a horse in one lesson, but I will give him another to-morrow, when I will show you the effect of the treatment upon him.

When the class had gone and he was left alone, he took the horse in hand and worked with him until twelve o'clock that night. Upon my return next morning, about ten o'clock, I found an assistant driving around with a buffalo-robe fastened upon the horse's back. Every few moments the horse would snort and kick at the parts of the robe hanging over his hips, and to all appearances as much afraid of it as the night before. As a final resort, they tried this method of familiarizing him with it.

Knowing the fear of the robe could not be overcome by the treatment used, and not willing to see the man defeated, I felt compelled, as an act of friendship, to help him out of the scrape. Not wishing to be identified in any way with the matter, I exacted a pledge of secrecy from the man driving him; after which I subjected the horse quickly to Second Method, and in less than ten minutes he was made perfectly gentle. The robe was pulled under the body, between the hind legs, and thrown upon him from a distance of over ten feet without his showing the least fear of it. He performed equally well the same evening before the class, proving perfectly gentle. The result was regarded as a proof of the great success of the treatment.

The treatment used upon him was a modified form of First Method. It was tried upon him persistently, as stated, for nearly two hours, and while down, the robe put upon him; but when allowed to get upon his feet, and the robe shown him, his resistance and fear of it were as great as before. Failing in this, the only resource left was the palliative treatment, which had no effect whatever upon

him. Pushing sharply with Second Method, made him for the moment sufficiently helpless to permit the robe to be put upon him, and when in the position of resistance, (on his feet) when he seemed to realize its harmless character he submitted unconditionally, and thereafter became entirely indifferent to it. The importance of this treatment is shown by the fact that though the lesson was not repeated, after standing almost an entire day, he proved entirely gentle.

Case VIII.

This was a nine-year old bay pony, owned by Mr. Smawley, a livery keeper in Petroleum Centre, Pa. This pony was so wild and reckless that he was in that region of country known by the name of Wild Pete. Every effort to break him had failed. It usually required two men to hold him while being groomed. He could be ridden, but it was utterly impossible to do anything with him in harness. Once when a harness was put on him, he became so frightened and reckless that he jumped and got away, and when found, all the harness excepting the collar had been torn or shaken off. His insane fear was so great that he was really wicked in his resistance.

Fig. 118.—Wild Pete.

When I visited the place in 1869, I was confronted with this horse. All said, "Let us see you drive Wild

Pete," regarding it as a good joke that they had a horse that could "beat the horse-tamer."

Upon examination, I found him a small, closely-knit fellow, possessing great action and power of endurance. His forehead was broad, and the head in all respects well formed. To test him, I put on the War Bridle, tied up his near fore-foot, and while holding him, with the lash of a straight buggy whip barely touched his quarters. This frightened him so intensely that he sprang over six feet

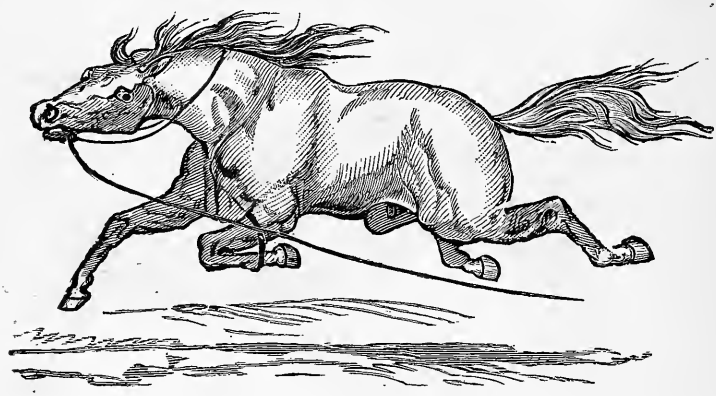


Fig. 119.—Wild Pete in the act of running away.

into the air, kicked violently, pulled away from me, and although on three legs, repeated this jumping and kicking for over half a mile.

I stated to the people that I could not break such a horse in a barn, but would form a class, and on the following day I would drive him before them without breeching, entirely gentle and fearless, and that the money for the instructions might be deposited in the bank, to be delivered to me on fulfillment of this condition. As this was one of the most interesting and marked cases I had found in all my experience, and as it represents a large class of nervous, unmanageable colts, I will include the full details of the treatment used:—

I first arranged with the owner to have him taken to the Titusville trotting park, eight miles distant, and there I subjected him carefully to Second Method, which was exactly adapted to his temperament. I touched his quarters very lightly at first, which he resisted by kicking, snorting, and jumping in the most desperate manner. But I persisted in the effort, repeatedly reversing both ways until he was compelled to submit to it, but not sufficiently to

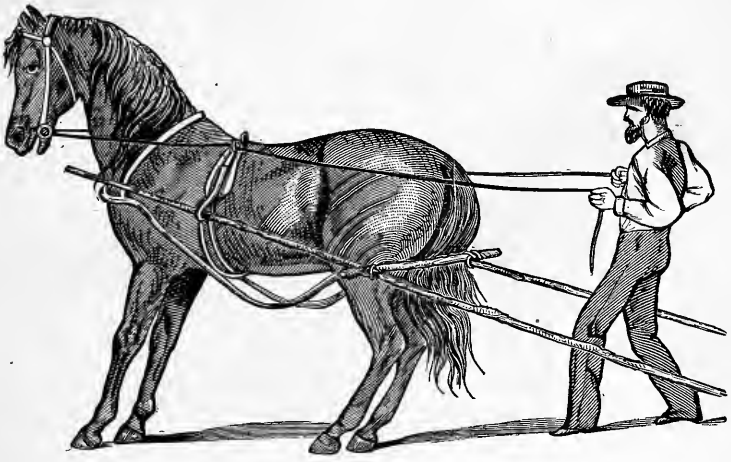


FIG. 120.—Pole Rig referred to below.

hold gentle. This so toned him down that I was then able to subject him without difficulty to First Method, which, as he resisted with great courage, was consequently very effective in his case, but not by any means sufficient to make him submit to be harnessed or put in shafts. Consequently, I subjected him again to Second Method, and now succeeded in making him entirely gentle to submit to having a pole brought against his flanks, etc.

The next step was to drive him, which I knew I could not safely do. To accomplish this, I improvised the pole rig for shafts. (See cut.) As soon as he found himself between the poles and allowed to move, he seemed for a few

moments to exert all the energy of despair in trying to get away. But expecting this, I was prepared to meet it and hold him, though his resistance at this stage was very determined.

This simple rig, though a chance outgrowth of incidental necessity, proved not only just the thing for the emergency, but a valuable acquisition for the management of colts and horses generally of this character. Turning right or left, the poles come against the legs; in backing, the

Fig. 121.—Wild Pete, as he appeared next day after being subdued.

ends stick into the ground, bringing the cross-piece firmly against the quarters. There is no danger of their breaking, and by their use the quarters can be accustomed to being touched or run against by the shafts in driving. Submitting to this he was practically broken, and at once harnessed before a wagon with breeching straps loose, and drove back to the American House, much of the way with the cross-piece striking his quarters, proving him perfectly gentle. That evening I drove him to Petroleum Centre, and the next day as promised, exhibited him in harness, proving him a model of docility.

An incident peculiar to this case is here worthy of men-

tion: Upon visiting this place about three years afterward, Mr. Smalley informed me that the horse had been used as a family carriage horse and was one of the safest in that part of the country, but that it was impossible to shoe him with the halter on, while with the bridle on he was perfectly gentle to have his feet handled. While treating him, had I taken up his feet after the harness was removed, and accustomed them to being handled and pounded upon for a few moments, he would have been just as gentle while being shod with the halter on as with the bridle. As it was, he could associate submission only in the manner the treatment was used, and this carried it no farther than driving with the control of the bit, and hence the docility to allow the feet to be handled while it was on.

CHAPTER IV.

KICKING.

KICKING is in all cases the result of ignorance or bad management. As explained in Colt Training and Fear, making one side of the body gentle and submissive to contact, will give no assurance in respect to the opposite side. Now

FIG. 122.—The effect of bad treatment.

when a colt or horse is broken as ordinarily done, and goes off all right when put in harness, it is taken for granted that he is as gentle and safe as can be expected; but, if by carelessness or accident the rein is caught under the tail, or the cross-piece or whiffletree should come suddenly against the quarters, those parts being practically unbroken, or not accustomed to such contact, the horse is liable to be so excited and frightened as to kick; and once started in this habit there is increased inclination to do so until confirmed in it. Now all this could be prevented without the

least difficulty by fifteen or twenty minutes' treatment, which would make the horse entirely insensible to such causes of contact. It is a habit also that merges into so many other faults that destroy the value of the horse and render him unsafe for use, that I consider it advisable to make this chapter as full in the details of management as space will permit. There is no reason to suppose that a horse is naturally bad and unmanageable because he kicks. The point is to make him sufficiently gentle to safely bear, without kicking, the restraint and excitement necessary in har

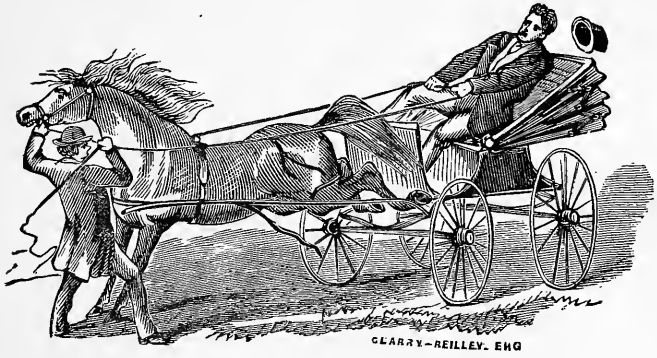


Fig. 123.—Treatment that only confirms the habit.

ness. Or when the habit is once formed to so combat it that all tendency to repeat it is overcome.

In the chapter on Colt Training I have given details of the treatment to be pursued for the management of excitable colts, or those that kick. It also includes directions for overcoming fear of the wagon, and other causes of excitement, until proved gentle to control, and the treatment as given there for such cases should be studied in connection with this.

In the chapter on Teaching Tricks, which can also be referred to, I have explained that the principle of breaking up and overcoming a habit is exactly the reverse of that of teaching a trick or habit. If, for example, in teaching a

horse to kick up, he were so gentle and fearless that he could not by any ordinary means be made to do so, it would be necessary to use such means as would excite and irritate him to kick, when he could be easily confirmed in the habit. On the same principle, if the horse is a very determined kicker, then an effort should be made to overcome the sensibility which is the cause of the kicking, until there is no inclination to repeat it. This can easily be done by either one, or by a combination, of the Methods of Subjection given.

FIG. 124.—A little doubtful.

To illustrate: I had a pony that I wished to teach to throw boys. As a preliminary to teaching him this trick, it was necessary to make him kick up promptly at command. The simplest way of teaching this trick is to prick lightly on the rump with a pin, and when the hind parts are thrown up a little, caress, and repeat until simply touching the part causes the horse to kick up. But this pony was so gentle that sticking the pin into his rump would not excite the least motion toward kicking. The only alternative now was to make the parts sufficiently sensitive to start him in the trick.

FIG. 125.

FIG. 126.

Points of good character.

I drove a few tacks into a shingle, filed the ends sharp, and of equal length, and hacked them into the skin a little to cause irritation. Next day on touching his rump with a pin, he kicked readily. A few repetitions made him so sensitive that even the lightest touch on the part with the finger, or even a motion toward the hip, would make him kick as high as I wished, which he would do ever afterward. This is teaching to kick.

Fig. 127.—Docile character.

Now if a horse is violently excited by any cause, such as by catching the rein under the tail, the breeching breaking or being too long, so as to allow the cross-piece or shafts to come against the quarters, etc., it would excite kicking, and the habit is taught precisely as if by intention. It is seen that after starting the horse in kicking, at each repetition of being touched or hurt he will kick the harder. So in learning by chance to kick in harness, the greater the excitement and fear produced and the oftener its repetition, the more reckless and determined will the habit become. Now any cause that excites and irritates this kicking without being able to control or stop it, will only intensify and confirm it. Consequently, when

Fig. 128.—Good eye.

a horse by chance is made to kick, and in trying to break up the habit is excited and badly managed, each repetition of treatment, if unsuccessful in overcoming the habit, only aggravates and tends to confirm it.

The key of success is in being able to combat the habit directly until all inclination to resist is overcome. But the method of doing this must in a great measure be governed by the peculiarity of disposition, and the intensity with which the habit is fixed. If the nervous system is so greatly deranged and weakened that kicking is in a great measure involuntary, and this cannot be overcome by subjective treatment, then such means must be used as will disable and restrain the kicking in harness until the inclination is fully overcome. So far as the act of kicking is concerned, it is about the same in all cases; but the energy of resistance and the persistence of the habit depend upon the sensibility, pluck, and endurance of the horse, and the degree to which the nervous system has been shaken or broken down by fear or abuse. A very little lack of good judgment here may sometimes cause a great deal of trouble and needless cruelty, and make the horse's subjection far more difficult. I pay particular attention to this point, and do not make a move until sure of the proper course. I have learned by long experience to take no false step if avoidable, knowing what trouble may result therefrom.

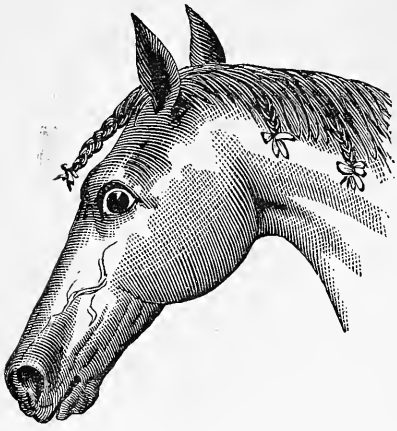


FIG. 129.—Sensitive. Will not bear abuse.

For instance: Is the horse a wild, reckless runaway, or simply one that, save the habit of kicking, is otherwise

gentle? Is he cold-blooded and persistent, throwing all his energy into kicking at all hazards? If the first, is the habit the result of fear, and to what degree is the nervous system weakened, or is the case one of a really bad disposition? If the second class, what is the undercurrent of his nature? Will he bear pushing while under excitement, or is he one that to warm him up is to excite only to more intense resistance?

If he is very sensitive, high strung, kicking mainly from fear, the treatment must be of a character not to heat the blood, excite, or give much freedom, when all

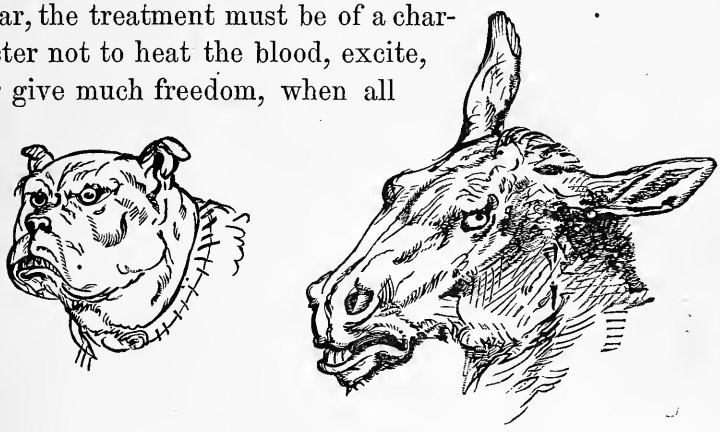


Fig. 130.—Ideal of sullen, treacherous nature.

that will be necessary to do will be to accustom him to the noise or rattle of the wagon, or bearing contact until fearless of it. If a headstrong, runaway kicker, especially one that kicks recklessly when touched, a simple course of subjection that will force his submission to restraint, will usually be all that is necessary; when by repeating the lesson in part once or twice the habit can be easily overcome.

If a cold-blooded, sulky kicker, or one that kicks only in harness, the habit must be combated directly until under control. The cold but courageous, switching kicker, kicking by spells or when excited, will usually submit most readily to simple restraint. To excite or irritate cases of

this character by general coercive methods, unless the after treatment is carried out with great care and judgment, will only do harm by irritating the nervous system to a degree that would only intensify the habit.

A good idea of these differences in disposition and character can be seen by the large variety of illustrations of heads in this and other chapters.

For inexperienced persons, the Breaking Rig, if available, would make the control of all ordinary cases simple and easy. But presuming it is not available, I will give

Fig. 131.—Ideal expression of the determined, fighting kicker.

my regular methods of management. As I have before explained, the principle of breaking a horse of a habit is the reverse of teaching it, and I have also reminded in the chapters before referred to (Colt Training and Fear), that making one part of the body gentle does not give assurance of making other parts so. The same in breaking a horse to drive in harness, making him gentle out of harness or in a position in which he is not accustomed to work, cannot be regarded as assurance of safety when hitched before a wagon. The subjection must be progressive until this end is attained.

Now to break a horse of kicking, the first point is to

make a reliable foundation by rendering him thoroughly gentle out of harness. In doing this, it will greatly facilitate success to adapt the treatment to the case as nearly as possible. I have learned, as one of the hard lessons of my experience, that if I let the horse resist me after once forcing his submission, it will only make him worse than he was before. It gives him increased courage and confidence afterward to fight back, and thus makes his character doubtful and treacherous. This taught me when I had a bad case to make every step sure;

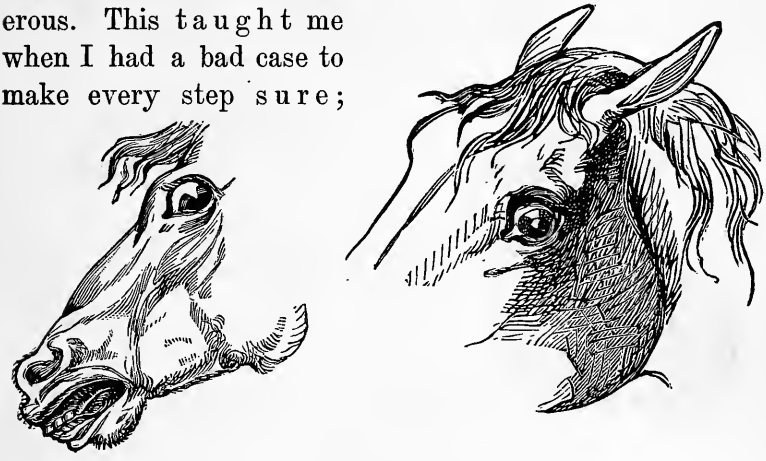


Fig. 132.—Points showing the expression of confirmed kickers.

from each step gained, to make the next until I came to driving, which I made so thorough that I felt sure of making the horse reliable.

Suppose we have a nervous, kicking colt or horse, of a naturally good disposition. Perhaps putting on the War Bridle and pulling him right and left a few times, just enough to disconcert a little, will make him submit in a few minutes to have a pole brought against the quarters, hips, and flanks. Simply repeat until the horse will submit to be poled in any manner with the head free. If the horse is strong and shows much fear of being touched around the

quarters, kicking hard, and trying to get away, this treatment will not be sufficient. It is necessary, therefore, to resort to means by which he can be controlled quickly and easily. The Second Method would be the simplest way of doing it, turning him right and left sharply, but not to the point of falling, at the same time bringing the pole against the quarters as he passes around, until he will submit to it without fear while standing still.

The point of his submitting unconditionally to be

FIG. 133.—A good expression of the sullen kicker.

touched all around the tail, quarters, and flanks, should at this stage be made very thorough. Then, when untied, repeat this poling; or, if necessary, by the control of the War Bridle repeat the poling until the horse will stand quietly while being poled in any manner with the head free. (See cut 41.) If the horse is of decided viciousness and great endurance, the treatment must be made more positive. For such, this method may not be sufficient. When this is anticipated, follow with either or both the other methods; and, if necessary, repeat the Second Method. If I have a good place and the horse will bear the excitement, I usually follow with the First Method, throwing

rapidly eight or ten times, as fast as the horse will get up; then stand behind him and excite him to get up, and roll him back until he will not try to get up. This is the limit of this treatment, and works well when the horse will get up with energy; but is almost inert when there is not much resistance to it.

All that is necessary when the horse gets up and is

Fig. 134.— Showing the impulsive, dangerous character of bad kickers when first brought for treatment.

standing on three legs, is to bring the pole against the quarters. If there is submission to it, simply repeat until he will bear the poling in any manner with his head and legs free. But if there is still resistance, follow with the Third Method, and repeat. While pressure is on, bring the pole against the quarters industriously. Usually, at first, the horse will kick hard when touched; but it is rarely there

will not be submission in a few minutes. This point made, gradually remove the pressure, and while doing so, keep rubbing and bringing the pole against the quarters and flanks until there is unconditional submission.

Sometimes young horses of this character are very bad. The greatest average of the worst horses I have ever found have been iron-gray, sorrel, or black, though I have occasionally found bays extremely bad. But the case must be very bad that will not yield readily to the Second and

Fig. 135.—As some very bad kickers will act when touched.

Third Methods. The First in many cases will be found equally effective. A great deal depends upon how the treatment is applied. A man may use either or all the methods, supposing he has done all that it is possible to do, and fail in subduing the horse, yet I may use the same treatment immediately afterward and succeed without difficulty, the only difference being in the proper application of the treatment. (These conditions will be found explained in connection with the description of each method in the first chapter.) When done properly, it should seldom require more than thirty or forty minutes to subdue even very bad cases.

The point accomplished of making the horse gentle in one position to be handled and poled, it must be carried to driving in harness, which is the real point to be attained; for however gentle the horse may be at this stage, he may still resist with great recklessness when driven to wagon. In many cases, if thoroughly subdued, he may be safely put to a wagon and driven; but if at all doubtful this should

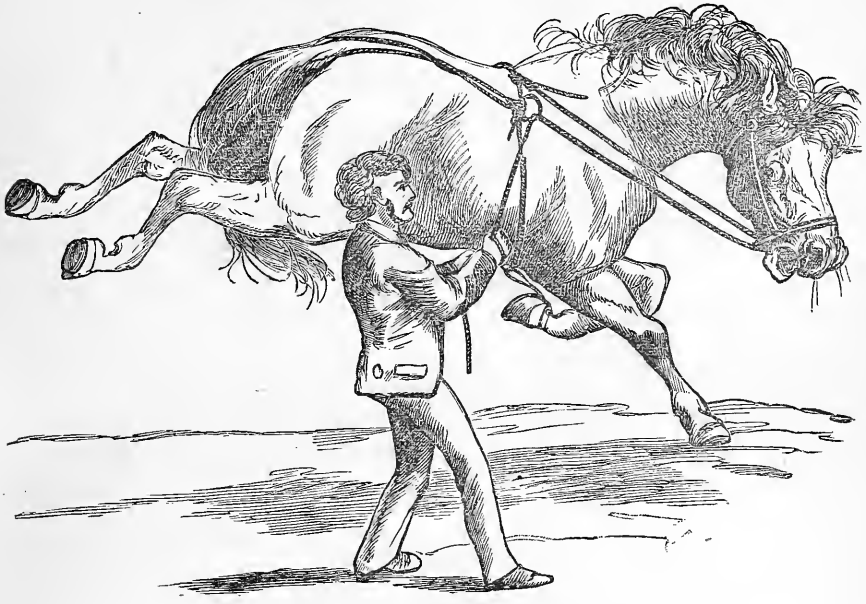


FIG. 136.—As the desperate kicker sometimes resists when subjected to First Method.

not be attempted, as in the event of kicking successfully a great point is lost. To break a horse reliably of kicking, means that there will be no inclination to kick in any position, no matter how irritated.

Now put on the harness, tie up the tugs and breeching straps, and run the reins through the shaft-bearers. The point in driving is to disconcert and control the horse sufficiently by the power of the bit, so that he can be controlled and driven by the restraint of the reins. The most power-

ful and simple means of controlling the mouth is by the Patent Bridle. If this is not available, the "W" or Breaking Bit should be used. The chief value of this bit depends upon the way it is used.

The advantage of the Patent Bridle is that it gives great power without requiring any special practice. Get directly behind the horse; if he is sensitive, it is better before starting to have an assistant bring a pole over the back and

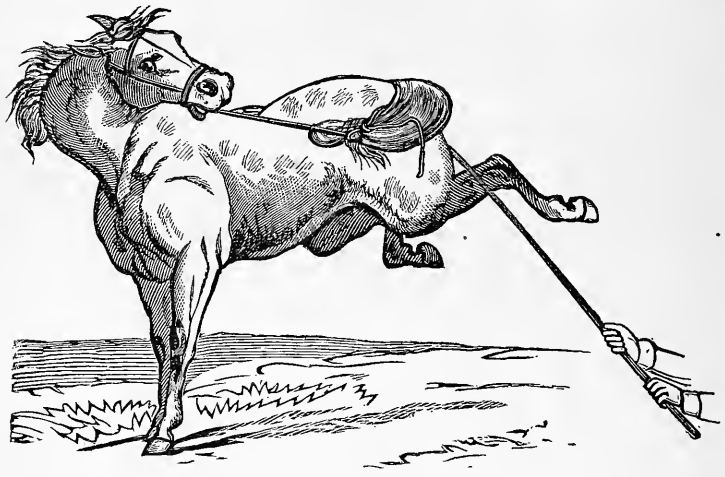


FIG. 137.—As the bad kicker will usually resist when touched while turning.

against the quarters on both sides and flanks until he takes no notice of it. Now start the horse gently, and, having driven a few steps, bring the pole against the quarters lightly at first, then repeat, until it can be brought with considerable force against the legs and quarters without exciting fear. If the horse is very sensitive, give an apple, stroke the head and nose, and speak kindly. No matter how severe the previous treatment, when submissive, kindness will be very important in quieting the nervous system. In addition, it tells the horse by his way of reasoning that the punishment is for kicking. Now drive right

and left, pulling the rein firmly against the outside quarter, and continue until the horse drives fast or slow as required. If disposed to resist when touched, and kicks, give a quick, sharp pull on the reins in order to pull the head up and back, which would disable and prevent carrying out his purpose. This is usually not difficult. But sometimes the horse will kick violently when this is done; if he does, and there is good control of the mouth, set him

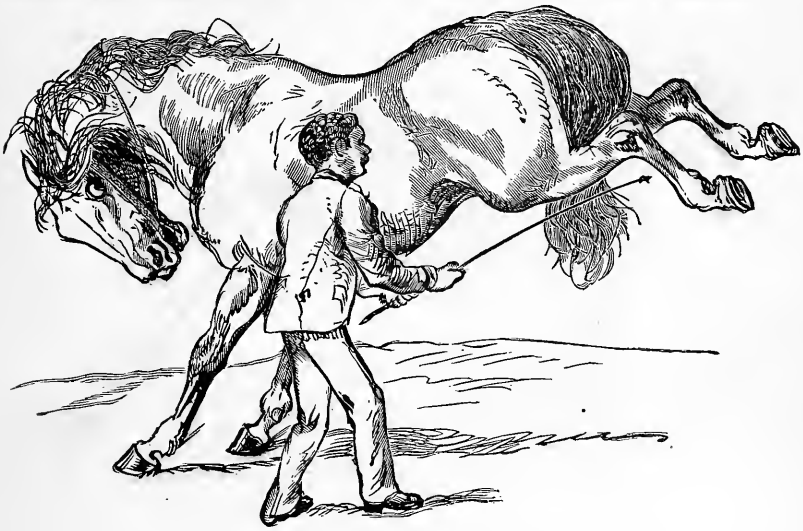


FIG. 138.—As extremely bad kickers resist when touched while pressure is on.

back hard against a rail or pole so arranged that it will strike the quarters on a level with the cross-piece of shafts, repeating until there is entire submission. (See Colt Training.) The point of doing this is to bring the quarters almost up to the pole, and then with a sharp, quick pull, force him back against it.

Should the horse resist the bit and appear plucky, he will try to pull far enough away to kick against the rail, which must not be permitted. But if there is sufficient control of the mouth, he can be held against it helplessly,

when after a few ineffectual efforts he will submit. Repeat this surging back against the rail until there is no resistance, then drive as before, being careful that all sensibility around the quarters is overcome before stopping.

Sometimes it is advisable to put on the foot-strap, and, at the commencement of driving when there is an effort to touch the quarters, pull the foot from under, which disables the horse so that he cannot kick. In my practice I rarely

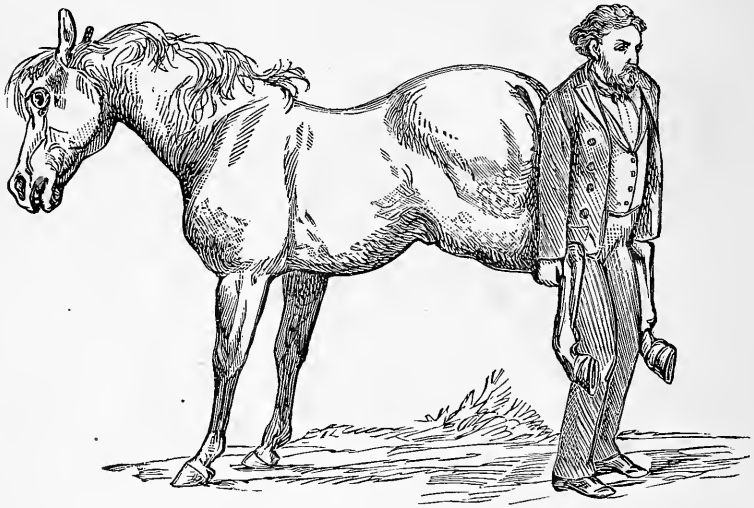


Fig. 139.—Test often given by the writer in proving the horse's docility after being subdued.

use this means. Sometimes it works well in the management of green, impulsive colts, and it will be found a good auxiliary means of control, but seldom necessary in the management of kickers.

If it is desired to be especially thorough and careful, hitch and drive to poles as described in Colt Training. Drive to the right and left, and back against the crosspiece. This will accustom the horse in moving to bear the pressure of the shafts against the quarters and flanks,—a very important point which cannot be done with regular shafts.

No matter how well the horse drives to poles, it is no assurance that he will be reliable before a wagon. The increased noise and rattle of the wagon will be an additional cause of excitement to which he must be accustomed. Before hitching, repeat the touching around the quarters and flanks with a pole. If he has been much frightened at the wagon, let him feel and smell of it, at the same time rattle it until he is accustomed to the noise, and encourage him by giving apples, etc.; then put in shafts. Pull the wagon

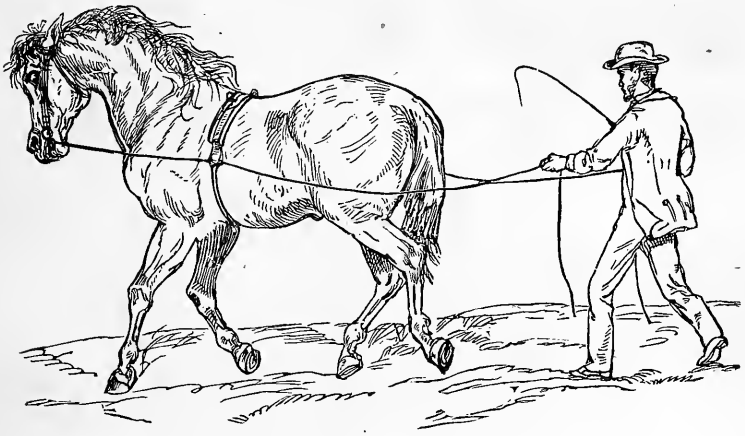


FIG. 140.—As the horse usually drives in harness after being subdued.

forward at first lightly against the quarters, gradually repeating until it can be brought against the parts quite hard. Now by starting him a little and pulling the wagon behind in this way, it can be ascertained what he will bear.

Attach him to the wagon without buckling the breeching-straps, get in, let him go slowly a few steps, then pull him back sharply, saying, "Whoa!" which will bring the wagon as before against the quarters. Repeat, driving him faster and faster, until he can be put at a moderate trot, and then increase to a run. In this way he becomes thoroughly reconciled to the noise and excitement of a wagon, as well as to the contact with the shafts. Of course

when it is desired to drive in the regular manner, the breeching-straps must be buckled.

A very important point, and one that should not be neglected, is, that when the horse behaves well, he should be encouraged by giving apples, talking to kindly, etc. A great deal also depends upon the temperament of the man. Some men, whatever their experience with horses, seem to be almost poison to them. They think that all that is necessary is to jerk a horse around, or subject him to treat-

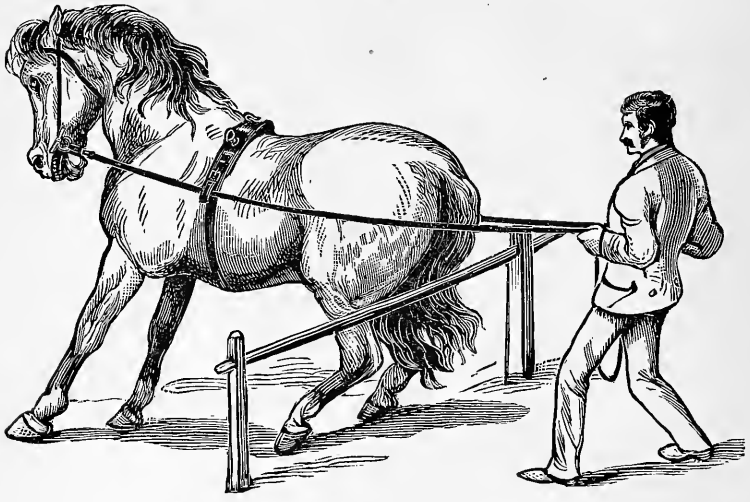


FIG. 141.—A test to which the horse should be subjected before being subdued.

ment as if but a mere machine; then if the horse acts badly or resists, they attribute the entire trouble to the bad character of the horse, instead of their own lack of skill and care. If at any point in driving the horse he should resist control and kick hard, he must be subjected again to the regular subjective course to the point of unconditional submission.

It was a matter of almost daily occurrence while traveling, to have young horses of this character brought me to experiment upon before my classes. Among them I would

FIG. 142.—One of the tests usually given by the writer before the class, proving the horse's entire submission in harness.

frequently find mares and colts which showed such terror when brought near a wagon as to jump and kick so desperately that the combined strength of several men could not bring them near, or hold them in shafts. The owner would usually say: "I would like to see you hitch up and drive my horse, but you must take your own chances. If you let anything strike his heels I'll warrant he'll kick and run away." And, "They never had a horse before this one that they could not break." Now it was rare that I was unable to drive such horses by the treatment explained, in from fifteen to thirty minutes. Such success, in connection with the apparent ease with which it was done, would always be a cause of the greatest surprise and satisfaction.

Fig. 143.—No life or action.

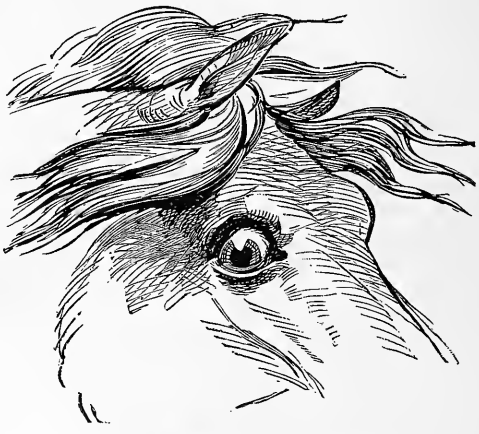


Fig. 144.—Sensibility and action.

Runaway Kickers.

The treatment for runaway kickers is practically the same as for horses of the previous habits, the difference being simply in training the mouth, which must be made suffi-

ciently thorough to compel unconditional submission to the restraint of the bit. (For full details see "Running Away.")

Confirmed Kickers.

Confirmed kickers are usually exceptionally bad cases, and may be classed under three heads, as follows: Nervous, Excitable Kickers, Sulky Kickers, and Switching Kickers. Some of the very worst horses of this kind I have ever broken, and which caused me the most trouble, were cases which, at first, did not seem very bad, but grew worse as they warmed up. Some will show the most wonderful pluck, striving to kick in defiance of all that can be done, and require not only the most careful but thorough course of treatment to be broken. While others, though kicking with extreme viciousness, and showing a great deal of excitement, may become entirely gentle by a short lesson of subjective treatment. So that the act of kicking must not alone influence the treatment so much as the peculiarity of disposition.

Fig. 145.—Norman Horse. Naturally gentle.

If the horse is large boned, with strong, dense texture of body, not inclined to put on flesh, gray or sorrel, eyes large, rather dark, showing much white, and with a sort of sullen expression, no matter what the character of the kicking, he will usually prove a hard fighter. Horses of this character usually will not bear any mistakes or fooling with.

They must be taken in hand with great care and thoroughness. Sometimes a very nervous, excitable horse will not bear the Second Method, becoming warmed up too quickly. In such a case, the First and Third Methods must be depended upon. Usually the Third will be all that is required. If so, the pressure should be all that the horse will bear, and when successful there will be entire submission, the eye softened in expression, and the whole system, as it were, relaxed, the horse showing no fear of having the pole brought against the quarters. In a general way I would advise treatment about as follows: If there is not entire docility after using the Third Method, use the First to the extent the case will bear. Much depends upon how this is done, and how the horse submits. If he is rangy, quick, and active, it may be necessary to be particularly careful to avoid hard, stony ground. Select a ploughed field free from stones, or where the sod is very soft. Throw the horse

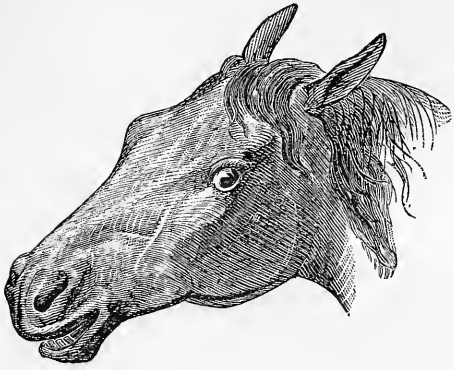


Fig. 146.— Sullen, treacherous nature.

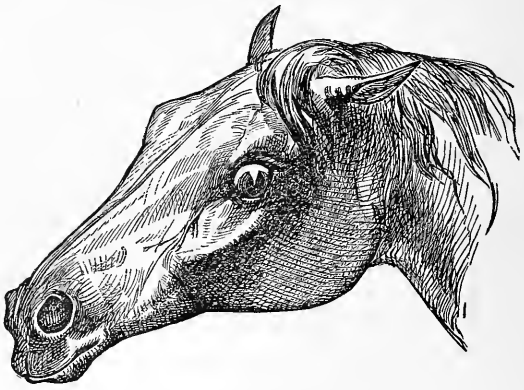


Fig. 147.—The best type of intelligent, courageous nature.

quickly, and as often as he will get up; then reverse the rig and throw him on the opposite side, and repeat. Now see what the result will be by poling and handling around the quarters; but few horses will resist it. If there is any inclination to kick afterward, the next alternative should be the Second Method. But I repeat: As much depends upon the way this is done as upon the method itself. The point is to throw the horse off his balance with sufficient force, and often enough to bear being poled at pleasure around the quarters and flanks,—a task not at all difficult to perform. If the horse has a good mouth, the after treatment will be simple and easy. The most difficult horses of this character to break are those with mouths so tender that they will not go against the bit, or will submit to it too easily. Presuming there is a good stiff mouth, (for nearly all these cases are of this character), put on the harness with Patent Bridle or Breaking Bit, and make the after treatment as before explained, being careful to be thorough, taking no chances that can be avoided until able to drive to wagon perfectly docile.

FIG. 148.—A noted vicious kicker.

SULKY KICKERS.

It has been explained in the first chapter that horses represent the different characteristics of the domestic animals. The most marked and annoying is the sullen or sulky nature represented by the bear, hog, or bulldog. As kick-

ers, they are very persistent and difficult to break, if not managed just right. Yet when treated properly they are not at all difficult to break of the habit. One of their peculiarities is that when broken they act as indifferent, and gentle to control, as though they had never had the habit.

Fig. 149.—A vicious horse before subjection.

When a horse is excitable and nervous, the treatment must be such as not to increase the excitement; while in managing cool, sulky fighters, it must be quick and aggressive. Sometimes the First Method will not work at all; it may, however, be tried, and if the horse can be made to get up with energy, make all the impression you can with it. Now follow quickly with Second Method. If you let the horse go his own way, touching him around the quarters, etc., he will only warm up into increased resistance. Motion with a pole toward the nose; if this does not cause him to move sufficiently quick, then touch him with the whip sharply, which, in addition to motioning toward the head, should push him as rapidly as desired. Reverse quickly and force as before up to the point of falling. Repeat in this way a few times, keeping him as nearly helpless and confused as possible, in the meantime poling as before explained. In extremely bad cases, if the treatment has not been carried far enough he will be likely to kick with great determination. If he does, grasp the pole with the end

Fig. 150.—The same after treatment.

back under the arm, catch the hitching part of the halter up near the head, and run around with him, at the same time pressing the pole against the quarters, and hold until submitted to. When successful on one side, go to the opposite side and repeat. Successful in this, pole him while standing, then untie and do the same. A remarkable feature will now be that when he once gives up, he will be likely to act as indifferent to the poling as if he never cared anything about it. It will be advisable, however, to put on the War Bridle—the most powerful form—and pull him right and left a few times, which greatly intensifies the impression of power already made.

The Third Method does not seem to work well on these cases because they will not resist under it; it works well only on those cases which resist it hard for a short time, then give up unconditionally; upon such it will be found very effective. While, as before explained, "throwing," or the First Method, does not produce impression sufficient to do much good unless the horse will try to resist it by getting up. The Breaking Rig would work well upon most of these cases. Among this class there is occasionally a horse that will seem to fight through all the treatment when warmed up, either sulking when forced, or fighting back. A point in the management of such cases, which I have practiced with great success, but which must be done with great care, is to carry the treatment so far that when cool he will be somewhat sore, when he will be found not much inclined to resist.

Now the point of success is to give him a short, sharp lesson, that will compel submission before he becomes warmed up; as his warming up would defeat the work by destroying sensibility and stimulating resistance. Usually turning around a few times will be all that is necessary to force submission. A horse that at first would be likely to

resist for hours, if pushed, will submit unconditionally in ten or fifteen minutes after becoming cool and over the effects of the excitement. Then work up slowly and carefully as before explained.

Fig. 151.—Expression of most obstinate cases.

For example: A small mustang pony, eight or nine years old, was brought me to experiment upon. The owner said he wished to show that he had a first-class kicker, and wanted a little fun out of him. At first, he did not seem to be very bad, but as he warmed up he kicked with the greatest fury; and after two hours' effort, I was compelled to give him up, failing completely. The pony really kicked worse than when I commenced. Upon returning to that place four years afterward, I was surprised to learn that this pony had been used as a pet by the little boys and girls of the family; that he was driven and used everywhere to a phæton, and was one of the finest and safest driving ponies in that country. The owner told me that a day or two after his having been handled by me, they thought they would see what they could do with him, and to their surprise they found him perfectly gentle. They put him in harness, and he drove off without any trouble. He behaved so kindly that the children drove him, and he was highly valued for his docility.

Fig. 152.—Will resist hard.

I found by experience that many cases when warmed

up would resist with such desperation that it would be very difficult and dangerous to force them to a point of submission; yet by putting them away until cool, and then repeating the treatment, they would submit perfectly in a few minutes. Some of my greatest feats in breaking extremely bad kickers have been accomplished in this way. The necessity for this repetition was frequently the cause of great embarrassment. Perhaps an extremely bad horse brought me for experiment would become so warmed up, and resist with so much determination, as to make the continuance of the effort little less than abuse. My only alternative would be to induce the owner to bring the horse to the next place of appointment, by guaranteeing to control and drive him there entirely gentle. This would excite so much suspicion and doubt in the minds of the class that they would invariably follow to see what the result would be. It then became a necessity to succeed, as to fail would be sufficient reason for demanding a return of their money. But I seldom found much trouble in making my point,—usually a short, sharp lesson would be sufficient.

FIG. 153.—Most difficult type of character to break.

Good cases illustrative of this principle are the Gallopsville Horse, Case No. 2, Subjection; Collins Horse, No. 6, Fear, and the Gates Horse, No. 3, Fear. While the last named could not be driven out of doors prudently when first handled, yet, afterward, when cool, the effect of the treatment was so marked that by merely testing a few moments two weeks afterward, he proved so gentle as to be driven without breeching, and down hill, through the

main street of the village, controlled by word of command alone while eight or ten rods distant. The Hanky Horse, No. 5, Kicking, was perhaps the most marked case. This horse could not have been driven the first time handled, yet by a short repetition of the lesson next day, he was driven without difficulty.

FIG. 154.—Ideal of bad character.

A great many interesting cases of this character could be referred to if necessary. The important point is not to do too much, yet enough to make the impression necessary to be able to force unconditional submission. Another point: No matter how well a horse may work immediately after being subdued, it should not be accepted as a proof that he is broken. He should be tested carefully when cool and over the excitement. If there is the least indication to resistance, the lesson must be repeated until there is certainty of the horse being safe. It is certain that anything short of doing enough to make the horse safe, or to overcome the habit, will be likely to result in disastrous failure; for giving the horse liberty at any stage to fight back, practically destroys all that has been done, by teaching him to become cunning and treacherous. Hence the importance of making every step sure to the point of driving, and establishing the impression so thoroughly that no

FIG. 155.—Sullen nature.

matter what the aggravation, there will be no inclination to repeat the habit.

Switching Kickers.

When a horse is greatly excited and irritated by fear or abuse, his nervous system is liable to become so sensitive that he will squeal and switch. This is more common to mares which are more impressible than horses; consequently, when badly spoiled, they are more difficult to break. In this form it becomes involuntary resistance, or a species of insanity, and in extreme cases very difficult to overcome. The point is, if possible, to make a sufficiently strong, counteracting impression to overcome this. Very much will depend upon how much the nervous system has been shaken, and the peculiarity of disposition. Some of the worst kickers I have ever handled were colts which had been greatly frightened and abused in breaking. The course I pursue with such is about as follows:—

If the case is one that will bear impressing sufficiently to overcome the kicking, I subject to regular treatment as advised for ordinary cases, directing my attention particularly to accustoming the quarters to being touched. Failing in this, I use direct means of restraint, such as the kicking-straps or over-draw checks. The kicking will now punish so severely that there will soon be fear to repeat it. The straps should be used in driving for some little time after the inclination to kick is overcome.

Kicking-Straps.

These straps should be cut at least two inches wide; they should be made of two thicknesses of good harness leather, sewed together and fitted so they will come nicely around the leg between the fetlock and gambrel. There should be a strong wrought iron D stitched on the front

sides. The insides should be lined with soft, thin leather, or buckskin, to prevent chafing the leg. If no Patent Bridle is available, use a strong, well-fitting halter, with the strap passing back between the legs over the belly-band; or it may be attached to the belly-band by a piece of rubber. Next, take a strong hempen cord, not less than five-eighths of an inch in diameter, firmly wound, or a good piece of leather made round like a rein, run it through a

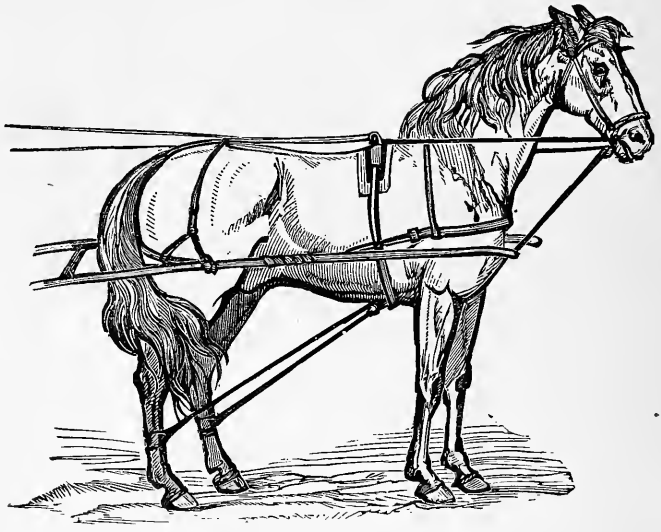


FIG. 156.—Kicking-Straps as arranged for use.

pulley or ring attached to the halter-strap a little back of the belly-band, and extend to the rings of the foot-straps. The point is to have the rig so regulated that the position of the horse will be perfectly natural in traveling; but should he run or kick, both legs coming back at once brings the whole force directly upon the nose. The straps should be kept on until the pain caused by the kicking makes the horse so much afraid to kick that he will not repeat it.

Sometimes the straps are connected with the bit so that the horse will kick directly against the mouth. But this

is objectionable because when the kicking is severe against the mouth it will be cut and bruised, besides it is liable to break the jaw. Even when kicking against the nose, by the restraint of the halter, there is possible danger of injuring the spinal cord at the juncture of the head with the spinal column. I never had an accident occur from such a cause, though I used the treatment a great deal in my early experimenting. I have heard of one case in Maine of a horse breaking his jaw by kicking against the bit, and one in Ohio, killed by the severity of the shock upon the neck.

Fig. 157.—Tail Strap.

It will be found that when the horse kicks against the mouth or nose, he will soon learn to throw the head down to give greater length between it and the legs, as this destroys the force of the blow. With the use of the Patent Bridle the force of the kicking throws the head up, and at the same time punishes with such severity that there will not be much inclination to repeat it, and the habit will soon be overcome.

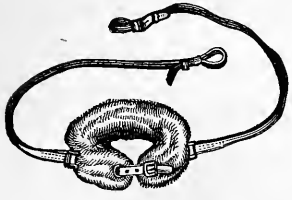


Fig. 158.—Tail Strap detached.

Twenty years ago, a very bad mare defied my utmost efforts to stop her kicking, and as a matter of experiment I passed a rope from the bit, to the hind leg below the fetlock, and thence back to the opposite side of the bit, and held it in my hand while I excited her to kick. After a few repetitions she gave up unconditionally. By this means I succeeded in breaking her of the habit, but the rope chafed and tore the skin so badly upon the legs that I had much trouble in

curing them. To guard against this in other cases, I put on straps to which I attached rings, and passing the rope through them as before, I irritated her to kick, repeating until there was submission. But as this could not be carried out in driving, the kicking-straps, with the connection made to the bit, were devised; after which the pulley arrangement was added. These straps are best adapted to kickers with the nervous system so weakened that the habit is in a great measure involuntary.

Foot-Straps.

I found that by tying up the leg, the horse was not only prevented from kicking, but so disabled that he could not go; while giving freedom to travel, and disabling only at the moment of danger, made a far more powerful means of restraint, and became a very effective means for the control of runaway colts. It is seen that if the leg is pulled from under just as there is intention to kick, it not only disables the same as if tied up, but serves to divert the horse from his purpose of kicking; while at the same time he can be given freedom to move again when it is desirable. When there was danger of the horse lunging ahead I used a foot-strap upon both fore feet. If the horse attempted to lunge forward after one leg was taken up, I instantly followed by pulling the other from under. In the case of a doubtful horse, the foot-strap will be found a good reserve power. During my practice of late years, I seldom made use of

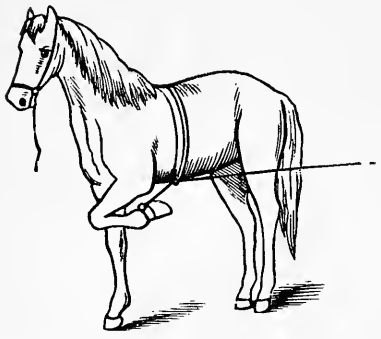


Fig. 159.—Foot Strap.

such means, but depend mainly upon the regular course of subjection to force submission.

Over-Draw Check.

The over-draw check can be modified in various ways, according to the case. Sometimes a simple over-draw check is all that is necessary. If more power is desired, in addition to the check, the restraint can be carried to the hips, thence to the shafts. (See cut 161.) So that in the act of kicking, as the quarters are elevated, the restraint will be

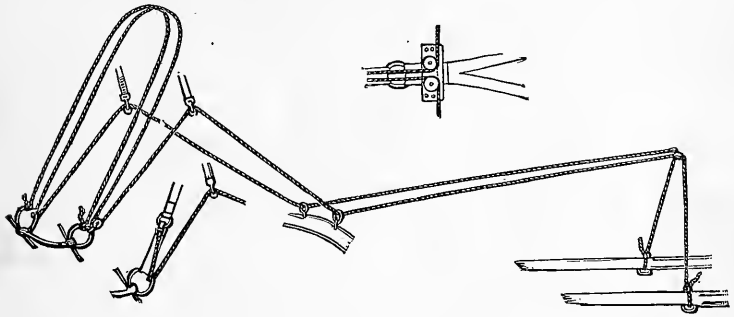


Fig. 160.—Simple method of forcing the head up, and preventing kicking by the elevation of the hips.

instantly brought upon the head, throwing it so high as to disable. This principle of control was learned by the writer under the following circumstances: In 1861, when in Henderson, Jefferson Co., N. Y., a half-witted fellow offered to instruct me how to drive any kicking, runaway horse. He said, "Bring the center of a slender rope of sufficient length to the top of the horse's head, and pass the ends down through the rings on each side of the bit, and thence back into the wagon as reins." I afterward used this means of control and found it would work well in some cases, though not in all. I gave the idea to a man named Hartman, in Lancaster, Pa., who modified it into what was afterward known as the "Hartman reins," which he patented. A

great improvement in this for kickers, is to pass the reins over the hips to the shafts as explained.

Checking the head high will sometimes hold in restraint a strong-willed, treacherous horse, that is liable to lunge sideways, or pull heavily. It will usually work well when a horse is a little irritable, and simply needs a little restraint to keep him inside the point of resistance, the same as

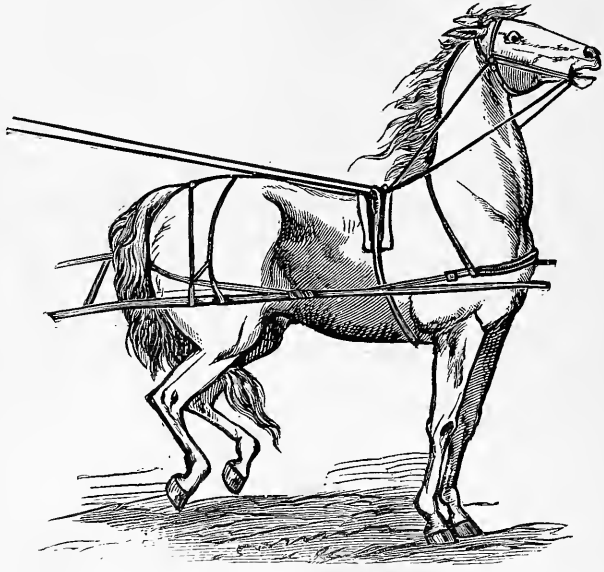


Fig. 161.—The horse as disabled when there is an effort to kick.

the tail-strap acts in preventing the horse from kicking by keeping the tail confined and helpless. The simplest and best way of checking the head high is to pass the check-rein through gag-runners, which should be attached to the head part of the bridle well up near the ears, and buckle into an extra bit, which is to be held up against the roof of the mouth by means of a strap passing over the nose. This form of checking the head up and back will be found very effective.

A common method in use years ago for kickers was to

put a triangular piece of iron, in form like a V, between the collar and bit. The central point resting upon the collar, and with both ends attached to the rings of the bit, it held the head up in position as desired. A strong-headed, doubtful horse will frequently drive with entire safety when the head is helplessly held up in this manner; but the check before referred to is the simplest and best means.

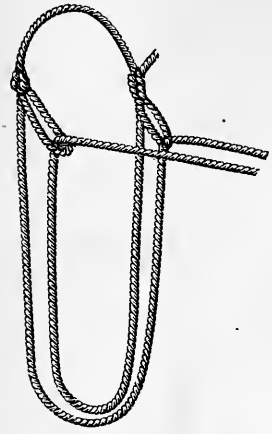


Fig. 162.—Simple method of controlling the head.

Sometimes the horse will kick only when the rein is caught under the tail. If he is simply irritable, and hugs the rein, the easiest way to prevent it is to wind an ordinary crupper with cloth, or cover nicely with chamios skin, or soft leather, until one half to two inches in diameter, as may be necessary. (See cut 165.) This being larger than the rein below makes it impossible for the horse to hug the rein with sufficient strength to hold it.

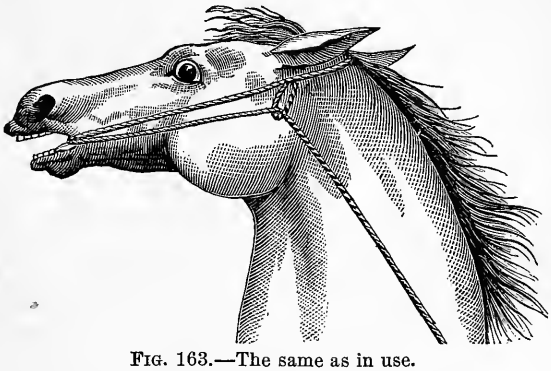


Fig. 163.—The same as in use.

When the tail becomes very sensitive from the continued chafing of the parts, its action becomes involuntary. In such cases it must be confined to make the horse safe. This can be easily done by buckling a small strap around it under the hair about two-thirds down the dock, from

which, on each side, extend a small strap to the hip-straps, and fasten short enough to prevent the tail from switching around and catching the reins.

Hip-Strap.

If the horse is irritable around the hips, but drives all right so long as restrained, or unable to bring the hind

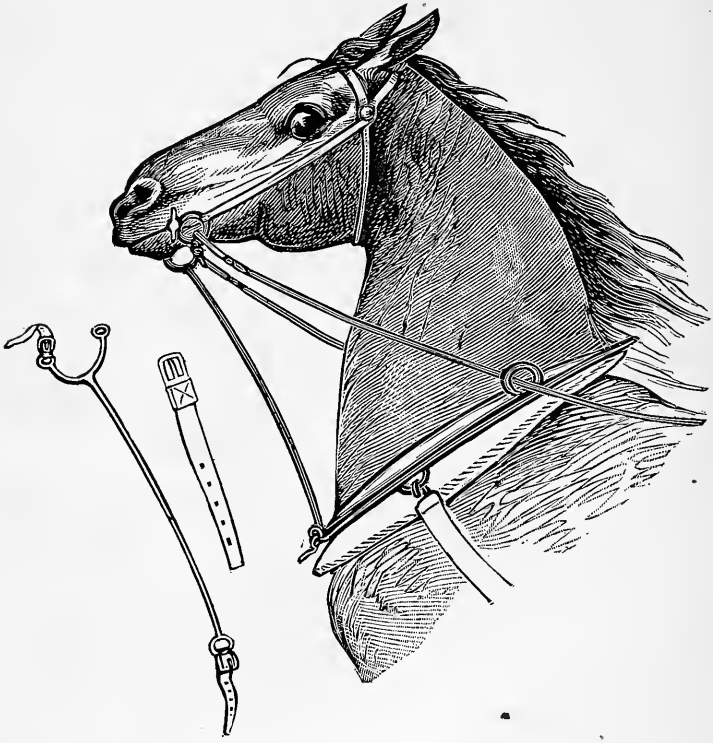


Fig. 164.—A simple method of keeping the head elevated to prevent kicking while driving.

parts up, simply strapping him down will sometimes be all that is necessary to do in order to use him with safety. The best way to do this is as follows: Attach a loop to the harness between the hip and tail; through this pass a strong two-inch strap with ends attached firmly to the

shafts on each side. There should be pieces of leather or iron screwed to the under sides of the shafts to keep the ends in place.

Two points must be kept in mind in order to be successful: 1st. The shafts must be so stiff that they will not bend much. 2nd. The strap over the hip should be so strong that it will not break, and just tight enough to be drawn straight when in place, but not so long as to give any freedom to raise the hips.

Four-ring Bit.

The four-ring bit by its power will sometimes throw the nose up, and occasionally make a doubtful, headstrong horse drive all right; but it is best adapted for the management of headstrong luggers. Sometimes a strong-headed puller that cannot be held by an ordinary bit will drive gentle with this. The effectiveness of this bit is in the pressure of its center against the roof of the mouth. As made heretofore, when pulled upon very hard, these rings would slide in so far as to prevent the desired purchase against the palate. To prevent this, I devised the slot, or obstruction.

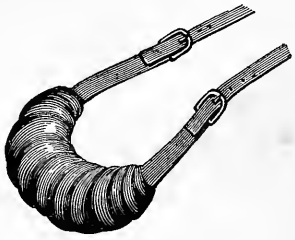


Fig. 165.—Crupper as wound to prevent catching the rein.

Sometimes the Patent Bridle will work quite well in the management of kickers.

For the Breaking Rig, see illustration with description in first chapter.

It may be asked, "Is there any medicine by which you can make a horse gentle?" See "Medicine" in "Subjection."

Kicking when Struck with the Whip in Driving.

Some horses are usually gentle until struck or touched with a whip on the back or flanks, which they will resist by kicking. Or when not going fast enough, if hit sharply with a whip, the response is a kick. There is usually no fear of the wagon or of anything exhibited; it is simply a sullen resistance, and unless treated properly is a very ugly habit to overcome.

For a simple, ordinary case of this kind, put on the War Bridle, and after giving a few sharp pulls with it, touch him over the back with a whip, at each repetition striking harder until he can be struck quite hard without resisting. Should he kick, punish sharply with the cord, and repeat until there is no resistance. Now put on the harness with reins through the shaft-bearers, and drive around, touching gradually over hips and back. Should there be resistance, punish sharply with War Bridle, which should be left on under the bridle. Simply repeat until successful. This should be all that is necessary to do to break any young horse. But if the horse is very bad, it will be likely to fail. In such a case, subject to either method, as may be found advisable. If the First Method be tried, touch with the whip after throwing. If the Third, while pressure is on, touch or strike lightly in the same manner whenever sensitive, until there is no resistance. If Second Method is used, touch the part while the horse is going around. In either case the point must be made thoroughly. Now put on the harness; if a Breaking Bit or Patent Bridle is available, it should be used. If the horse will go ahead freely at command, the work will usually be sufficient. But if he sulks, refusing to go against the bit, the case will be serious. In such cases proceed about as follows:—

Get a good bow whip of the best quality, from six to

seven feet long, say in a quick and sharp manner, "Get up!" If he does not respond at once, catch both reins in the left hand, step a little to left, at the same time lift the reins out of the way of the whip, and give him one or two sharp cuts around the legs up near the belly. Then quickly jerk upon the near rein to disconcert and throw the head up. If the horse springs ahead surprised and disconcerted, a few repetitions will soon establish the idea of going ahead when commanded. Should he, however, kick in response, this must at once be abandoned; as in bad cases these fellows will stand sullenly, and fight every time struck. Grasp the reins as before in the left hand, and step to the right and forward of the quarters. Instantly after the sharp "Get up!" give one or two keen cuts with the whip across the tip of the nose. This will so surprise him as to cause him to jump quickly. After a few repetitions he will, at command, spring ahead without being touched, when the point is made. Now drive around right and left until he will start or stop as desired. When the horse works well, make friends with him by giving apples, etc., which tells him that punishment is for resistance, and reward for obedience. No matter how stubborn these cases may appear at first, if treated sharply in this way they will invariably work in well.

When I first hitched up "Gifford," he seemed to have his own mind about going, and would not start ahead when commanded. I gave him a sharp touch of the whip, when he kicked and smashed the dash in. This was his trick, of which I knew nothing. I at once unhitched him, and treated as just explained, until he would start promptly, and he never kicked afterward.

Sometimes in driving or trotting, a horse will go off all right until struck with the whip or pushed a little, when he will sulk or kick. Such are usually horses showing a large

undercurrent of the positive or sullen nature, and are very provoking when irritated. They seem difficult to manage because there is no way of forcing that will not react in trouble. During my early experience I used the foot-strap with much success in the management of this habit. At the instant of touching sharply with the whip, pull the foot from under, which not only disconcerts the horse, but prevents the kicking. Indeed, this alone will enable the perfect control of most of these cases.

Kickers in Stall.

In the first place, for the management of kickers in the stall, a great deal depends upon the size of the stall and adroitness of the man in approaching the horse. A very narrow stall makes it somewhat difficult, if not dangerous, to approach even many gentle horses. Such stalls are not only an abomination for the increased danger and inconvenience they cause in going around a horse, but for not affording sufficient freedom for the horse to lie down and step around. It is no reason for stalls being so constructed because somebody who should know better makes them so. If the stall is large, there will be better opportuuity to keep out of reach, and, unless the horse is very vicious, there will be no difficulty in going around him with comparative safety.

Then, much depends upon the character of the man. A courageous, determined horse soon learns to become aggressive toward a naturally timid man who seems afraid to approach him. If a horse is very vicious in his stall, he is like any other dangerous brute upon which nothing short of a thorough course of subjective treatment will produce any impression. But if irritable or cunning, a sharp lesson with the War Bridle until he will follow promptly

will usually be sufficient; after which it may be left on for a day or two.

The treatment for all ordinary cases should be about as follows: First, put on the War Bridle, Second Form, which may, if the case is stubborn, be turned into the *Double Draw Hitch Form*, and make him feel its power sufficiently to follow promptly. Lead him into the stall, and while holding the cord, step in and out repeatedly, making him, during the time, keep his hind parts turned in the opposite direction. This treatment may be accompanied by giving apples, etc.

If the case is important, and it is desired to be very thorough, after putting on the halter, put on the War Bridle, Second Form, with the part going through the mouth running through the rings on either side of the halter to keep it in place, and the part over the head well back upon the neck. Now pass the cord back to the end of the stall and tie to a ring or post, leaving it sufficiently long to give the horse room to step around as usual when tied by the halter. When it is desired to go in, if he does not step around at command, untie the cord and give a sharp pull upon it, which will bring the head around, throwing the hind parts to the opposite side, when he can be approached with safety. This may be repeated when first put on for a few times, to teach the idea of stepping around when commanded. After a few repetitions he will soon learn, when approached and commanded, to step around.

There is a great sleight in approaching vicious horses when in stalls, the disregard of which may sometimes cause a naturally gentle horse to kick if approached or touched unexpectedly. First, no matter how gentle a horse is, there should be no effort to go near or approach before attracting his attention by speaking to him. If at

all doubtful, the course should be about as follows: When behind, a little to the near side, look directly at the horse's head and say sharply, "Get around!" repeating until the eye is caught. A great deal depends upon the expression of confidence and authority shown. An intelligent, courageous horse will discern instantly any lack of confidence or power, and become correspondingly aggressive.

At first the horse may look back and try to measure your strength and be disposed to question your advance. It will be a matter of will power now. Look at him with all the firmness you can, and repeat the "Get around!" with the most thorough vim of expression. If a man of any nerve, but few horses will disobey. If he steps around, no matter if the ears are put back and the eyes partly closed showing inclination to kick, there will seldom be much danger. The eye kept firmly upon that of the horse, will discover any movement almost before it is made; so reach the end of the stall fronting the horse, with head slightly turned to hold the eye, and make a quick, gliding leap or long step toward the shoulder. After getting well forward of the hips there will be little danger; watching the opportunity in this way, and moving quickly, will permit getting beyond reach of danger before the horse can kick.

This is really the only secret of getting around or into the stall of a doubtful horse without getting hurt. (See chapter on "Stallions.") By observing closely, the intentions of the horse will always be revealed by the expression of the eye and his actions. Danger is shown by the ears being thrown back, eyes partly closed, lips drawn back, and mouth perhaps partly open. If the horse will not move when commanded, but holds his position firmly, especially if one having a dark, lurking eye set well into the head, thick eyelids, and heavy ears, the character is

treacherous and needless risks should not be hazarded. What such a horse does he will do quickly without warning. But if he seems to yield, no matter how bad he is, and there is quickness in getting into the stall, as explained, there will be but little danger.

I have frequently been able to go into the stalls of horses that were very dangerous, and have never been kicked or hurt while doing so. Many times the horse would kick the stall, but by a sharp, ringing command sufficient to disconcert, and by jumping quickly, I could always get to the shoulder or head without being touched. In many cases I have been compelled to take the chances from necessity; but by observing these precautions, and calculating my chances carefully, I would be able to get by, though at the instant of doing so the horse would kick the stall behind me.

When desiring to get out, pull the head around after, bringing the hind parts well around to the opposite side. The instant the halter is let go, step or spring beyond reach.

While Harnessing.

The habit of kicking while harnessing is always the result of carelessness or bad treatment. Were the horse treated kindly and the harness put on gently until accustomed to it, there would be no trouble. Not being accustomed to the breeching or the crupper under the tail, a sensitive horse is liable to kick when feeling pressure upon those parts. I have frequently found horses gentle after the harness was on, yet they would kick violently when the attempt was made to put it on; while others would kick only after it was on. All that is necessary to do in such cases, is to put on the War Bridle, and, after giving a few sharp pulls with it, hold firmly in the left hand, and while keeping it taut upon the mouth, with the right spread the

harness gently over the back and hips. The pressure of the cord upon the mouth will hold the attention of the horse sufficiently to allow putting the crupper under the tail and buckling.

To break up the habit, it may be necessary to repeat this treatment two or three times, punishing sharply for any resistance, and encouraging by kind treatment for allowing it to be put on and off as desired. After gaining the attention by the War Bridle, it may be drawn down and tied as in cut 66, page 67, but not kept so more than

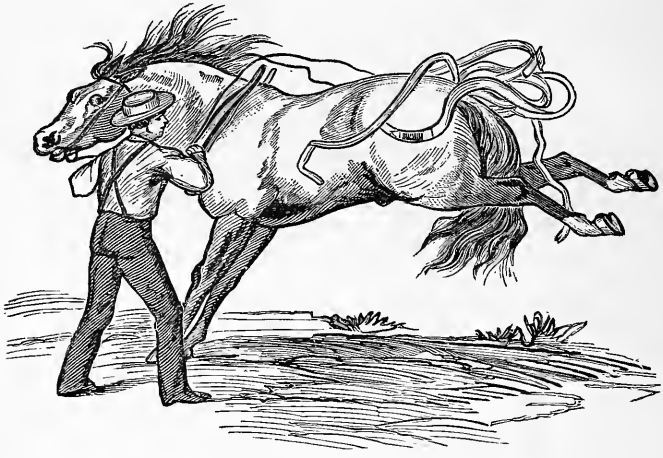


FIG. 166.—As a bad case of this character will usually resist before treatment.

thirty seconds to a minute; after which the harness can be put on or off as desired. It is very important in these cases to associate kindness with the treatment by giving apples, etc.

Resistance to having the collar put on, or the neck touched in consequence of having been made sore, is sometimes a formidable difficulty, as the horse may show great viciousness, striking or kicking violently. If the treatment named is not sufficient, then more force must be

used; but with care, the War Bridle will be found sufficient. In such cases, attention must be given to having the collar large enough to permit putting easily over the head. Or if an open collar, it should be unbuckled and put on quietly over the neck. In addition, particular attention should be given to curing the parts if sore. A great point also in the management of such cases is in winning the confidence of the horse to bear having the sensitive parts touched by scratching the mane and other parts,

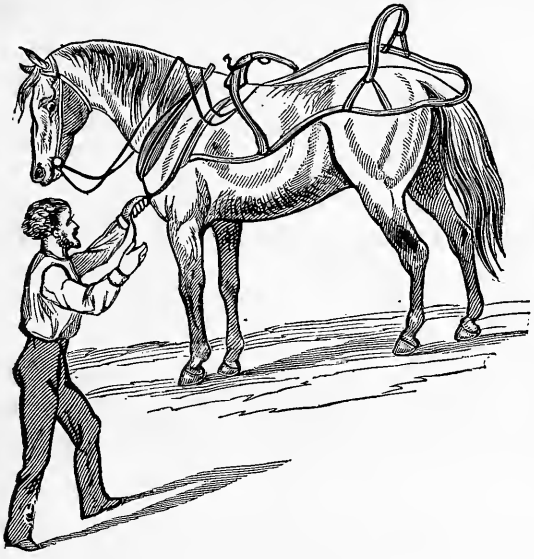


FIG. 167.—As the horse will stand quietly to be harnessed after treatment.

and imperceptibly approaching the sensitive parts until it is borne; then follow by caressing, giving apples, etc.

There may be cases also where resistance to the harness upon the hips, or crupper under the tail, will be very violent. In such cases a regular course of subjection may be necessary. One of the worst horses the writer ever handled was of this character, compelling to resort to the First, Second, and Third Methods, which were in part repeated to break him of the habit.

Kicking and Biting While Grooming.

The habit of kicking and biting while grooming, is in all cases the result of bad treatment. A sharp currycomb or card is usually raked recklessly over the legs and belly, regardless of cutting into the skin. The horse may snap, kick, and almost lie down upon the ground in the effort to avoid or relieve the pain; but no more attention is given to this than to kick and pound as a means of compelling to stand quietly. Sharp currycombs, or any instrument that will hurt, should not be used upon such horses. Should the horse be over-sensitive, the result of former bad treatment, restrain a little with the War Bridle until he will submit to being cleaned as directed. In such cases, it is always advisable to commence at an insensible part, and work gradually to the part at which the grooming is resisted.

Bad to Bridle.

Most horses will submit readily to be bridled by giving a short lesson with the War Bridle, and tying down as explained, when the bridle can be put on or off as desired. Care should be taken to have the bridle large and easy-fitting. As there is submission, give more freedom until there is no resistance. Should the horse show viciousness, and resist this treatment, then subject to Second Method, and while tied, handle the head and put on the bridle. When untied, restrain with the cord, being careful in such cases to work gently, rewarding liberally for obedience. Able once to take off or put on the bridle without force, repeat for some time, holding the attention by giving apples, etc. Such a horse should be bridled with care for some time to outgrow the sensibility.

Case 1.—Putney Horse.

This was an eight-year old bay, of close, compact structure, weighing about 950 pounds, and owned by J. B. Blanchard, of Putney, Vt. He was a runaway kicker of the worst stamp, having defied every effort to break him. In a passive condition he appeared to be a horse of ordinarily good character, with eyes rather dark, of medium size, and with a sullen expression. His ears were rather long, and set on well apart, quite long from eyes to ears, and with good, broad forehead,—all indicating endurance, courage, and pluck, of the most decided character. When brought forward to be experimented upon, no intimation was given of his character. It was simply claimed that he was unbroken. Upon trial he developed the most desperate resistance.

Not having a suitable place in which to handle him, the First Method, which was exactly adapted to his temperament, could not be used. Resisting the Second Method, he was subjected to the Third, which was carried to its utmost limit before he yielded.

Upon testing the mouth he developed the most determined opposition. With the Breaking Bit he pulled ten men —five to each rein—on a walk across the barn, resisting even to being pulled down upon his knees, but submitted in about forty minutes. The whole treatment required about an hour. Next day he was brought to Westmoreland, N. H., where I was advertised, and upon testing him he proved perfectly gentle. On the following day the owner drove him to a sleigh twenty miles to Keene, where the horse was well known, and also drove him in the streets while there without breeching, proving him perfectly gentle. The horsemen declared they knew such a horse could not be broken, but here was the undoubted proof of his docility. This incident enabled me to make a large class.

Case 2.—Malone Horse.

This was probably one of the most notable kicking, runaway horses ever known in the State of Ohio, special reference to which is made in "Personal Experience." He was a fine, blooded trotter, eight years old, about 16 hands high, and weighed about 1050 pounds. In appearance he was quiet, and perfectly gentle to ride and handle. The greatest effort had been made for years to break this horse, but without success. At the time of my visit to the place, all hope of ever being able to subdue him had been abandoned. I subjected him to the First Method, which he at first violently resisted, but after being thrown about a dozen times he submitted unconditionally. It was not sufficient, however, to produce the degree of submission desired, and he was next subjected to the Second Method, which he also resisted with great courage, requiring in all about twenty minutes. The foundation was now laid for the next step,—that of obtaining control of the mouth. This was, if anything, his strong point, having resisted all kinds of bits and rigging.

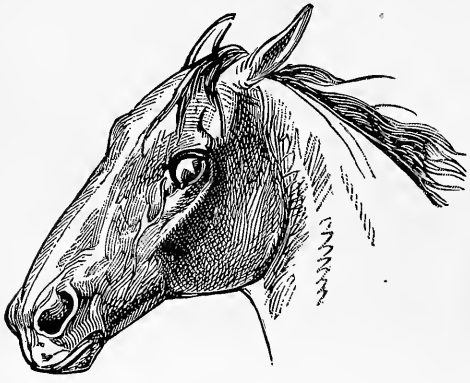


Fig. 168.—The Malone Horse.

When tested with the Breaking Bit, he plunged against it, fighting so hard that at one time he went over the rope upon the seats. By careful management, however, he was in about twenty minutes brought under perfect control. Next morning I tested him hard in the ring, and found him

manageable. I now took him outside the city to know definitely what he would bear in the street. Upon careful trial he proved entirely manageable, when I drove him back. I now trained him to stop, turn right and left, to the motion of the whip, continuing the lesson about ten minutes, resting as long, then repeating until he would turn right and left as desired. I employed every spare moment in this way up to 12 o'clock, when I hitched him up without reins, letting shafts go against the quarters, etc., and drove to the square, where there was a large crowd, and proved

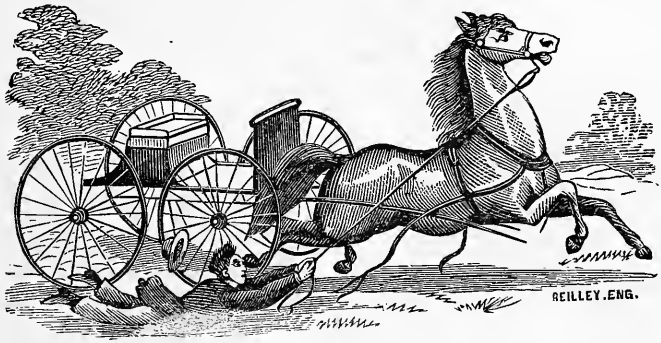


FIG. 169.—An incident of the Malone Horse. Result of an effort by a horse-breaker to drive him.

him perfectly gentle. For several days, each time, before hitching up, I tested him by running the shafts against his quarters, to remind him of his lesson; otherwise he was treated with great care and kindness, being quieted down by petting, giving apples, etc. I explained to the class that, in the management of this and all other cases of like character, it would be necessary, after a spell of idleness, to remind of the lesson by a slight repetition of treatment.

I sold the horse to a leading horseman, A. S. Robins, who had been a member of the class, and who had witnessed all the details of the treatment. I especially explained to him the necessity for this case. Upon my leav-

ing the city he desired me to take the horse with me for a few weeks, which I did. Finding his constitution had been seriously injured by the severity of the treatment to which he had been previously subjected in the effort to break him, and that the least use of him got him off his feed, to improve his condition I had him carefully fed, and kept quiet during the time in my care, over a month, intending, as a matter of safety, before allowing him to be taken away, to give him another short lesson; but while I was absent the owner sent for him. After letting him rest a short

Fig. 170.—The Malone Horse as driven, next day after treatment, on the Square, without bridle, reins, or breeching.

time, he hitched him to a buggy, took in a friend, and drove around the city all right. But when near home, on driving sharply round a corner at the Kenard House, perceiving the horse wiggle his tail as if to kick, he jumped out on one side, and his friend on the other. The horse, finding himself free, ran away, and tore the wagon to pieces. Some said he kicked; others that he did not. Happening in the city the next day, and hearing that the famous Malone horse had run away, I called upon Mr. R. for an explanation. The moment he saw me he said:—

"Do n't say a word. I am entirely to blame; not the horse. I drove him all over the city, and never had a horse drive nicer. But somehow I got the idea he was going to kick, and before I knew what I was about, I jumped out and let him go. He did n't try to kick."

I said, "Let me take him, I will soon make him so he will drive with perfect safety."

"No," he replied, "I am afraid of him, and shall never ride behind him again."

I give these details, mainly, to show how liable good horsemen, of even much intelligence, are to fail on account of not carrying out the instructions properly.

Case 3.—Watson Horse.

This was a kicking, runaway horse of the worst character, owned by a coal-dealer named Watson, in Memphis, Tenn. He was a rather heavy-boned, light gray gelding, nine years old, and weighed about 1030 pounds. There were so many incidents of interest connected with this horse that I give some of the details: He was in appearance and color very much like the last one referred to, simply a little heavier boned and shorter legged, but a horse of wonderful pluck and endurance. He was acknowledged to be the worst runaway kicker in the State of Tennessee. Over a year before, a horse-drover from Kentucky, hearing of him, claimed he could drive him or any other living horse. Upon trial the horse ran away, clearing himself from the wagon, throwing the man out so violently as to cause an arm to be broken, and otherwise seriously injuring him. Afterward, a mule-drover from the eastern part of the State claimed to be able to drive him, betting largely upon the results. As before, the horse ran away, threw the man out, nearly killing him, and plunged into the Mississippi River, from which he was with diffi-

culty rescued. Upon my arrival there, this man was still confined in the city, helpless from the effects of the injury.

It was considered a good joke to test me with this horse; and to do anything there, I found it necessary to break him. I took him outside the city for treatment, and subjected him to First Method. Not proving sufficient, I followed it quickly with Second, alternating with First, then again with the Second with great rapidity, when he submitted to being touched around the quarters without offering to kick.

Upon trying his mouth I found it entirely unmanageable; but after about an hour's effort, succeeded in making him drive perfectly gentle. The same afternoon I drove him, without breeching, down the principal street of the city by word of command, while distant from him eight or ten rods, letting him go fast or slow, stopping and starting him as I desired. It was believed, however, that he must have been under the influence of medicine. To test this, he was shut up for a week, after which I was requested by Generals Forest, Rucker, and other leading citizens, to drive him to a carriage. Upon arriving, I found the horse hitched ready to be driven, and the demand, "We want to see you get in and drive this horse now." This was decidedly risky, as it is rarely that sufficient impression can be made upon the brain by one lesson to make a horse safe eight days afterward. To fail, as they predicted, would of course be equivalent to exposing me as a humbug. Pretending to be under the influence of liquor, I staggered toward the horse's head, and with the apparent effort of steadying myself, with the right hand I grasped both reins back of the jaw, and gave a sudden pull down and back, at the same time saying sharply, "Whoa!" The horse yielded perceptibly to this, which was sufficient to show me that the mouth was entirely manageable. I immediately got in,

drove the horse about ten rods, turned him quickly around, and drove back down hill on a fast trot. Upon reaching them I threw the lines out over his head and yelled, "Whoa!" He stopped so quickly as to slide fully ten feet. All were convinced there was no humbug about that, and joined in voting me all right.

Case 4.—Hettrick Horse.

For a domestic horse, this was one of the most vicious, striking, kicking, runaway brutes the writer ever saw. He was a large sorrel, weighing about 1150 lbs., and was owned by a man named Hettrick, who kept a hack-stable on Thirtieth-st., near Sixth Avenue. Mr. Hettrick first saw the horse hitched up in Twenty-fourth-st., to a big cart, with both wheels blocked. Two men were holding him by the head, and the third in the cart holding by the reins. The horse was sold for $275, on condition that he could be driven. Notwithstanding the precautions taken, at the first jump he ran away, tearing the cart to pieces. Mr. Hettrick left his card, stating that he would give $50 for the horse, and he was accordingly sent to him for that price. As he expressed himself to me that evening, he was willing to give $50 for a good subject with which to test me.

Fig. 171.—The Hettrick Horse after being subdued.

The moment I saw the horse I knew I had an unusually dangerous fellow to deal with. I told the owner I did not consider it prudent to take such a horse before a class un-

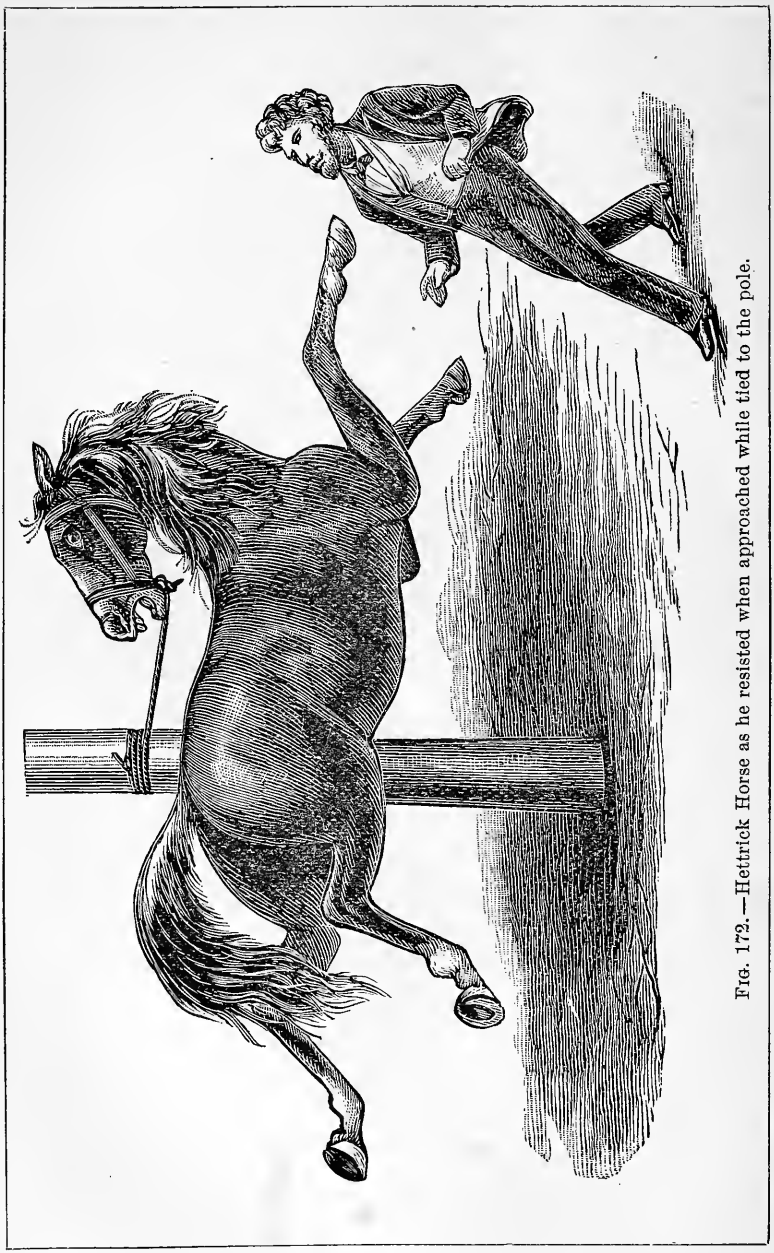


FIG. 172.—Hettrick Horse as he resisted when approached while tied to the pole.

til I knew what he would bear, as it might cause me considerable trouble to get to him, and besides expose the class to accident. As he could be led safely by keeping well out to the end of the halter, I had him taken over to my place, on the opposite side of the street, and tied to the center-pole. I found I could not go near him to touch any part of his body without getting struck or kicked. His resistance was so remarkable in this respect that I give an illustration of it. But once getting my hands upon him, which took me nearly an hour to do, I was so provoked

FIG. 173 — The Hettrick Horse as driven in the street next day.

that I did not stop until I had completely subdued him. I subjected him to Second Method, which he resisted, acting more like a wild, untamable animal than a horse. At one time he jumped over the rope upon the seats, breaking down several of them,—just such an accident as I had anticipated. I next subjected him to First Method, then again to Second, which completely subdued him. The rest was easy; he was simply tested with the Breaking Bit until compelled to submit to it. He was hitched up the next day, driven to Central Park, and proved entirely gentle, in single or double harness. He had so much of the wild, mustang nature that, notwithstanding his entire docility in harness, it would have been a dangerous experi-

ment, even after being thus subdued, excepting when done very cautiously, to put the hand upon his nose, as it would cause him to snort and strike.

This case was so interesting that I had an accurate drawing made of his head, which I had engraved with others, and which is given at the heading of this case. Notwithstanding it was an accurate drawing of the head after being subdued, and shows a very bad expression of character, it scarcely gives an idea of the striking expression of viciousness before being subdued.

Case 5.—Hankey Mare.

This was a seven-year-old mare, owned by Mr. F. A. Hankey, of Gettysburg, Pennsylvania. She was a bright bay, weighing about 1000 pounds, of remarkably strong, firm texture of body. She had a good intelligent head, showing the indications of great activity and pluck. The eyes were rather small, showing much white, eyelids rather heavy, quite long from eyes to ears, and ears long.

She was raised by the owner, Mr. Hankey, who tried to break her when she was three years old, but, notwithstanding he resorted to every possible expedient, completely failed. She not only resisted the control of several men, but ran away, carrying with her a heavy four-horse wagon loaded with manure. The following letter to a cousin of his, Wm. Motter, of Emmetsburg, will explain itself:—

"Dear Sir:—

"I was a member of Mr. Magner's class yesterday in Gettysburg. He had a class of over forty scholars. I took in my mare for him to handle, which I had been trying to break from the time she was three years old, and could do nothing with her. She was the *worst runaway kicking* mare I ever saw, and I had given up all hopes of ever being able to break her. After trying every way I could to break her and failing, I made up my mind I would fix her for once so she could n't run away; so I filled my large, four-horse wagon with manure, and hitched her to it, with three other horses. Notwithstanding there were three men holding her in addition, she carried wagon, horses, and men, right away with her mouth, and tore everything to pieces. It took two hours yesterday to control her. To-day I took her to

Fairfield, where she was hitched up, before the class, perfectly gentle, not minding the cross-piece running against her quarters, or showing the least inclination to kick. I write this to say to you, and all my friends, to join his class and learn his system. He is no humbug. The knowledge to be gained is that which farmers and horse-owners cannot afford to be without.

"Yours Truly, F. A. HANKEY."

The facts of her running away with a four-horse wagon, I was positively assured to be in every particular true. Mr. Hankey joined the class on condition that the mare should be driven gentle. Being compelled to handle her in the midst of a large crowd in an ordinary sized carriage-house, with hard ground floor, the difficulty of her subjection was greatly increased. She was subjected first to Third Method, which was carried to the fullest extreme for about fifteen minutes, then to the Second, after which again to the Third, when she submitted to have the quarters touched without kicking.

Her resistance to the bit was extreme, and it required over an hour to make her yield at all to its restraint. Not considering it safe to drive her while warm, I told the owner if he would take her to Fairfield next day that, with a little additional treatment, she could be driven with entire satisfaction. He and a large number of the class followed me there, where, as promised, she was driven with entire success. As explained in chapter on "Kicking," though many of these extremely desperate cases cannot be driven while warm, because liable to fight back, which would be equivalent to failure, by putting away until cool and over the excitement, they can be driven with but little difficulty. If the horse cannot then be driven with entire safety, the safest and best way is to repeat the lesson, when the driving will be made easy.

CASE 6.—GOODMAN HORSE.

This case is included not only to show some of the difficulties the writer encountered during his early experience,

but to call attention to a type of character that will often be met.

In Goodman, Mississippi, I had a large class. The only subject offered for experiment was an ordinary looking sorrel, medium sized, and to all appearance, perfectly docile. This was all the more puzzling to me, as I noticed a general expression of interest to see the horse driven. To illustrate the First Method, the "throwing rig" was put on, when, with scarcely an effort of resistance, he dropped down upon his side without appearing to have energy enough to get up. He was equally indifferent to the Second Method. No matter how confined or pushed, he could not be made to go around rapidly enough to cause the least dizziness; also out of harness he was as indifferent as an ox while having a pole brought against his quarters or legs. While attempting to drive in harness, there was no resistance to being hitched up; but the moment started, he commenced such a volley of kicking as I never saw a horse do before. If confined too closely he would drop sullenly upon his belly, not attempting to resist until again upon his feet and an effort was made to move him, when he would repeat the kicking.

I told the class I never saw such a kicker before, that the simplest way of satisfying them would be to give them their money back. Their answer was :—

"No, sir; you advertised to drive any horse. We have furnished you with one, and we want to see you drive him. If you can't do it, we will see that you stop traveling through the State swindling the people."

This implied that if I could not do it my career would be short. It was not a matter of teaching the class any more, but of driving the horse. Aided by a number of the class, who really did all they could to help me, I worked upon the horse from four o'clock in the afternoon till ten at

night, without making the least apparent headway in his subjection. The horse was now put in the stable, when he went to eating as unconcernedly as though nothing had happened. Next morning I again took him in hand, putting him before a cart, and working him until dark without, so far as I could see, making any progress whatever in his control. I went to bed thoroughly tired, but determined to go through the matter at any hazard.

Next morning, after breakfast, I went out to look at him. He stood eating, apparently as quiet and unconcerned as though he had not been touched. I stepped into his stall to study him a little closer, and found his mouth simply a little sore from the effects of the bit which had been used. In attempting to back him out of the stall he resisted. This so provoked me that I determined for once to have the best of him. I put the hitching part of the halter, which was of ordinary rope, through his mouth, and sent him back on a run to the middle of the floor. At this point he collected himself for a desperate fight, but my temper being up, I sent him back out of the barn into the middle of the yard, against the reach of an old lumber wagon which happened to be there. Now commenced a most desperate struggle, which lasted fully a minute, he making an effort to kick up, and I to hold him so closely against the reach that he could not do it. He finally gave up the contest, quivering all over. His whole nature seemed now to be changed. I knew I had him safe, and at once hitched him up without breeching, and drove him through the streets perfectly gentle. All expressed themselves perfectly satisfied, saying, "You are a good fellow," etc. Certainly I felt happy in being able to feel myself out of the scrape. At my request the owner took him to Carrolton, about thirty miles distant, where, to the surprise of the people who knew his former bad character, I drove him

hitched to a wagon without breeching, starting and stopping him by word of command while ten rods distant. This was the means of making me a large class there.

This horse was nine years old, half mustang and half thoroughbred. He was of medium size, strong and compact in form. His owner, who had the reputation of being one of the best horsemen in that part of the State, told me he never had a horse before that he could not break, but this one defied his utmost effort,—in fact, he never saw such a horse before.

The Third Method would have enabled the easy management of this case. The method of treatment should have been about as follows: When subjected to pressure he should have been put in shafts or poles and made to move, letting the cross-piece strike the quarters; as he submitted, the pressure should have been removed until he could be driven without restraint. If properly carried out, I am confident this course would, as proved in the management of a great many cases of like character, have enabled his easy control in fifteen to thirty or forty minutes.

The Breaking Rig would also have enabled his easy management.

I give the particulars of this case mainly to show through what effort much of my success was obtained, as well as to impress more clearly the course of treatment to be pursued. Much of my trouble really arose from ignorance, or in not knowing what to do. In this connection I think it advisable for future reference to make the following explanation: I have reminded in the treatment of this case that the Second Method would not work, because the horse would not turn. I refer to it to show how little I knew about the true principle of carrying out this valuable method of treatment at that time, notwithstanding I invented it, and had practiced it for over ten years with great success. The treatment by this method should have been as follows:—

First, tie just short enough to move him. If tied too short there is danger of his rearing up, mustang style, and falling over backward, or of going round so quickly as to fall down before the nervous system can be sufficiently impressed to prevent his lunging or throwing himself. The aim should be to move the horse moderately at first, gradually forcing up quicker, but not to the point of falling. After tying, have ready a good bow whip, stand upon the outside, and give him a good sharp touch across the nose. After two or three times the horse will usually stop, and throw the head down and forward, pulling upon the halter with great severity. Now tie a little shorter, and force more quickly with the whip. If inclined to pull sullenly, force up quicker. The more sullen the temperament, the more necessity for compelling more activity with the whip. The greatest alertness and judgment are required to do this well. First, the instant the horse is about to fall, he should be quickly untied and tied in the opposite direction before he regains his balance, repeating in this way perhaps two or three times. All this should not ordinarily require more than five or eight minutes, though in some cases it may require longer time. When properly done, the effect of this treatment is sometimes quite surprising. Next, put on the harness with the Breaking Bit, under which the War Bridle may be put for reserve. Drive the horse around, frightening him to jump ahead, and disconcerting by an occasional sharp cut of the whip across the nose. The horse will not usually resist until put in harness, when he is apt to fight back quite hard. When this is attempted, fight it through, or rush him over it, which can be done by the War Bridle, the Double Draw Hitch Form is best. This enables lifting him right and left out of his tracks, as desired, which has a powerful influence in discouraging these sullen cases at this point. But with the Third Method, as explained, the

management of these cases becomes still easier and simpler.

Case 7.—McVay Horse.

This case was very nearly like the last one referred to, with the exception of a large blending of the nervous temperament with that of the sullen or sulky nature, and, of course, was more intense in resistance. She had kicked from the time she was a colt, and had become so fixed in the habit that she would kick and squeal as soon as the door of her stable was opened. As this is a very remarkable case I will give its history:—

The firm of McVay & Allison bought of L. L. Dorsey, of Kentucky, the well known breeder of "Gold Dust" trotting stock, three young mares and a stallion. One of these mares was a most desperate kicker, and considered a hopeless case. She was sold at an exceedingly low price to get rid of her. The buyers supposed they had an especially good bargain, not anticipating any trouble in breaking her. Upon getting the horses home, the most persistent effort was made to break this mare, employing for the purpose, at different times, the most successful horse-breakers to be found in that part of the State. Every effort only left her worse than before. At the time of my visit there she was seven years old, and regarded by her owners as worthless.

In spite of the most liberal advertising in this town, I found it impossible to excite the least interest in my efforts; and as a last resort offered to forfeit $500, if I could not subdue and drive without breeching, in forty minutes, any horse that could be produced. I was entirely ignorant of this mare, which, as can be seen, was an unusually difficult case, or I would not have ventured taking such a risk. The owners, supposing they had a sure thing on this mare

to break me down, told their superintendent to join the class, and take her in; that they did not care if she was killed; for as they could not break her they did not wish to breed from her, and she was, consequently, good for nothing. A few who were let into the secret came forward and bought tickets, feeling sure that they could get their money back, not having the most remote idea that the mare could be driven in the time specified. Upon seeing her, I saw at once that she was one of the worst kickers I ever had brought me to experiment upon before a class; and that to succeed at all, it must be by a well-directed and supreme effort,—a sort of rush that would break up her confidence before she warmed up.

She was subjected to First Method, as a matter of trial, which she did not resist, and it was, in consequence, useless in her case. The Third Method was next used, and carried to the utmost of what could be done with it, and followed quickly with the Second. The important point to which I wish to call attention in the management of this case is, that it was made effective only by forcing her rapidly with a whip (as explained in the application of the treatment at the close of the last case), after which she was harnessed quickly, and rushed around the ring rapidly without kicking back once successfully. A little time was now taken in testing her, to which she submitted unconditionally, when the doors were thrown open, and she was driven up and down the street to the surprise of all who knew her. All was done within forty minutes. It was yet believed by the owners, and all who knew her, that she would be as bad as ever the next day. I cautioned the man who brought her in (who was claimed to be one of the best horsemen in the country) to test her very carefully, by partly repeating the treatment for several days; and doing this I thought he would be able to hold her gentle.

Next morning, after breakfast, this man called upon me at the hotel, and requested me to go into the street with him. After going a few rods, he pointed to a horse harnessed to a buggy, and hitched to a post. "There she is," said he. And sure enough, there was the mare. I felt indignant that he should disregard my instructions. But he said he had tried her in every way that morning, that she could not be made to kick, so he concluded to hitch her up and drive her down (two miles), and that she had driven all right.

About six weeks later, when at Newark, Ohio, Mr. McVay came to me, and stated that his mare was perfectly gentle, and the most promising and valuable mare in Richland County; that he used her for family driving, and one day while driving her rapidly before a sleigh, in company with his children, the breeching broke, letting the sleigh run against her heels. He expected, of course, she would kick and run away, but, to his surprise, the instant he said, "Whoa!" she stopped quietly, not showing the least fear, or offering to kick. He added that if I would come back to Mansfield I could get as large a class as I would want. I felt so indignant at the contemptible opposition and prejudice to which I had been subjected there, that I said I would not go back and teach a class there under any condition.

It is proper to explain that the mare's not kicking that morning was very much a matter of chance. Had she kicked, the effect of the treatment the day before would have been entirely undone. This is referred to, to show the importance, at this stage, of being careful to make every step sure in the management of such cases, and leave no chance for failure.

Case 8.—General Knox Stallion.

This was a four-year-old black stallion, owned by Mr. Stevens, of Lancaster, N. H., and is a case of so much interest that I will give the details.

When at a small town in Vermont, forty miles from this point, a horse-breaker, who attended my lectures, wished to know whether I intended visiting Lancaster. Answering "Yes," he said, "You will get the worst horse there to handle you ever saw in your life. He will do everything mean a horse can do. The owner is a good horseman, but wishing to take no chances, he sent him here for me to break. I had him here six weeks, and succeeded in driving him in harness, but could really do nothing at all with him. If he could do nothing else he would kick, lunge into the fence, or throw himself down. I was arrested twice for cruelty to him. I could have broken him, but did not have the time, so I sent him home. You will find him there, and I tell you he is a bad one."

Fig. 174.—The Stevens Horse after being subdued.

When I went to Lancaster the owner of this colt was pointed out to me. I walked up and invited him to join the class. He replied that he had no confidence whatever in me; that he had seen any number of horse-breakers, etc., and knew all he wanted to know about horse-taming. I said to him:—

"I believe, sir, you have a horse you cannot manage, and I can put you in the way of breaking him."

"You cannot break him," said he; "I can break any horse you can."

"You cannot break your colt," said I.

"No," he answered, "nor can any one else do it."

"Bring him here," said I. "If I have a correct impression of the case, I believe I can drive him gentle in twenty or thirty minutes." Finally yielding, the colt was sent for, and led forward for my inspection. I stated at once, that I could drive him without breeching in fifteen minutes.

"It is utterly impossible," said Mr. Stevens. "You don't know anything about him."

I told him to come into the class, and if I did not hitch up and drive the colt in fifteen minutes and convince him there was no humbug about my treatment, that I would not only give him his money back, but $25, in addition, also guaranteeing to give him $500, if I injured the horse in any way.

He looked at me sharply, saying, "I do not know what to think of it. Either you are one of the worst humbugs in the world, or else you know more about horses than any other living man; I do not know which." He finally concluded to join the class, with the understanding that if I failed in the least he should hold me strictly responsible for any damage done to the horse. On this condition I took his name and money.

I saw at once where the trouble was. The colt was intensely sensitive, but intelligent, and any treatment which would excite him in the least would make him a most difficult subject to manage. I knew also just the treatment he would bear. He was so nervous that when the bedding was being scraped up, or moved behind him, he would almost jump into the manger from fear. He was subjected with care to the Third Method, using only ordinary press-

ure, when he submitted readily to treatment, and, as promised, was hitched up and driven gentle. The owner had to admit that he was astonished at the result. On the following day the horse was taken to the next town, where I was advertised, hitched up and driven, without breeching, in the street. A week later Mr. Stevens informed me that the colt was just as gentle as when I left him, his character being completely changed. The whole trouble in this case was bad management. I include the case mainly to show the importance of knowing what to do, and how to apply the treatment properly.

The horse-breaker previously referred to had been a member of my class many years before, and supposed he knew all that could be learned about the management of such cases, and was, in fact, considered an extra good horse-breaker, yet, as seen, he was entirely incompetent to manage this case.

Any careful, patient man, who knew nothing about my methods of subjection, could, by taking time, have managed this case, without serious difficulty, by proceeding about as follows: First, fill the pockets with good apples; next, take a pole something like a rakestale, and while holding the horse by the halter bring the end slowly over the back and hips, rubbing gently down the quarters and legs, back and forth. In the meantime give a little apple, and caress. This lesson repeated a few times would have made him entirely fearless of being touched and handled. Next, the gradual process of driving around in harness, and poles, as explained in Colt Training, would have made him entirely fearless of being touched around the quarters by shafts, etc., and would have taught him to be guided and controlled by the reins, and driven to a light sulky. In this way he could have been grown in slowly, within one-half to a day's time, and not have learned anything about resistance.

Case 9.—Wild Ravenna Colt.

In conclusion I will refer to a case which caused me a great deal of anxiety on account of the danger of bringing him under canvas, and treating before a class. I introduce it mainly as a good representative of a certain class of wild colts, and to show the wonderful change that can be produced in a horse by proper treatment.

While at Ravenna, Ohio, during the County Fair, I had a canvas on the ground for my special use. A colt was led in from a distance of some five or six miles, between two men, who controlled him by a long rope attached to either side of the halter The colt was six years old, weighing from 1050 to 1100 pounds, of so wild and impulsive a character that nothing could be done in the way of breaking him. He seemed quiet enough when not approached, touched, or in any way excited; but would rush or jump impulsively around more like a wild steer or mule than a horse, the moment any one came in sight, or near, as though to lay hands upon him. When led on the ground, there was a wide scattering of the people for some distance around him, as it was evident that should the least thing occur to get him started he would be liable to precipitate himself into their midst, and perhaps kill some one. The question became, "Was it worth while, for what I could make, to take the chances of getting him un-

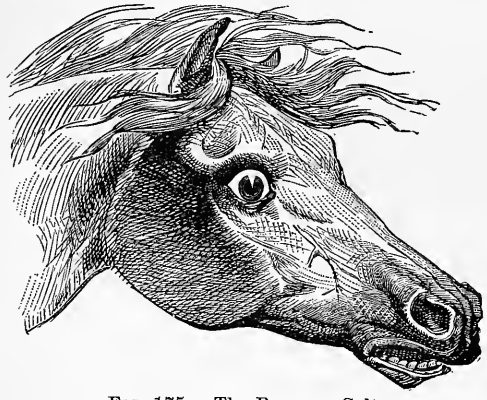


Fig. 175.—The Ravenna Colt.

der canvas, and, with a crowd of people around, try to subdue him there?" I finally concluded that if the chances were great I must make them proportionately advantageous; that the very danger and risk implied corresponding success. I accordingly announced that if a class of a certain number could be raised I would guarantee to make the colt as gentle in twenty minutes as any horse, and should I fail would refund the money. The number being quickly made up, I raised the canvas on one side, and by using great care got the colt under without much difficulty. But if he was nervous and afraid outside, he was very much more so inside. I however succeeded in getting near enough to attach a strap to his halter and tie to the tail. This done, the case was practically simple and safe; for, notwithstanding he made a heroic struggle, I had him so completely in my power that he was helpless so far as doing harm. In a short time I was able to take off the ropes and force complete submission. This was done wholly by the "Second Method." In ten minutes I hitched and drove him around without breeching, now entirely quiet and submissive. I directed the owner to at once put him in the team and drive home, and he drove off without the least trouble.

I knew there would be no difficulty in making the colt gentle, and stated so positively. The danger and real difficulty lay in taking him among the people, in a public place, for should he get excited he would be liable to tear through the canvas with such wild fury that the most serious consequences might result. Could the case have been treated at home, all this would have been simple and easy. The greatest point of interest about the case was the ease and quickness with which he was made completely gentle, becoming as indifferent to excitement or contact with the wagon as an ordinary cart horse; and

the simplicity of the treatment by which such a surprising change was accomplished made it seem easy for any ordinary man to do the same.

The greatest average of cases offered for experiment were colts that had become vicious, runaway kickers by bad management, and young stallions that had become so headstrong and impulsive that they could not be controlled. Such were the best subjects upon which to illustrate treatment, rarely requiring more than half to three-quarters of an hour to make them gentle. The treatment for the first-named cases has been so carefully explained under different heads that it need not be referred to farther here. But so little reference has been made to this class of stallions that I will, in conclusion, refer to two representative cases.

Case 10.—Lima Stallion.

When at Lima, Indiana, a gentleman informed me that he had a finely-bred stallion, seven years old, that continually got the better of him, and he did not know what to do with him. The horse was intelligent and of beautiful form, but for want of exercise and proper treatment had become so headstrong and impulsive that the owner could do nothing with him. "Now," said he, "I do not consider myself a fool with horses. I have handled them all my life and can drive any common horse as well as the average of men; but I cannot see how it is possible by any reasonable treatment to control such a horse as mine in the short time of twenty or thirty minutes, so that he can be led by the halter, driven to harness, and near other horses and mares without kicking or running away. It is contrary to all reason. I would be afraid to undertake to lead him out, for I know I could not hold him. Why, he has never been harnessed or put in shafts in his life. I

can see how it might be possible to accomplish this in a day or two, but to do so much in so short a time is what I cannot understand."

I give these remarks because they are simply the expression of what I almost daily heard from those interested in special cases. It seemed difficult to them because they did not understand how it could be done. The case was simply subjected to Second Method, to which it yielded readily. He was then taught to follow with the War Bridle, after which he was easily driven as promised.

CHAPTER V.

BAD TO SHOE.

LIKE most other habits to which horses are subject, that of resisting to have the feet taken up and submitted to restraint for shoeing, is caused by carelessness, or ignorant, bad treatment. By the use of a little patience and tact, it is rarely that even very sensitive colts cannot be made to

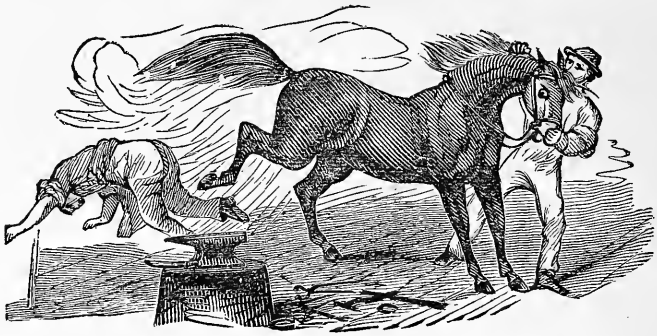


FIG. 176.—As a vicious horse will sometimes act while being shod.

submit the feet to be handled and pounded upon as desired; and once done, unless there is some special cause for disturbance, it can always be done. It is true there is occasionally a young horse that is naturally so wild and vicious as to resist all ordinary good management in the effort to take up and handle the feet; but with our present methods of treatment, even these cases submit readily to control in a short time, so that the management of even the worst of these cases is not at all really difficult.

If a colt of ordinary good character, give a short lesson with the First Form of War Bridle, when the feet can be taken up without difficulty. The efficiency of this simple method of control, in making colts submit to be rode, led, or handled, is very remarkable; and in no respect is it greater than in allowing the feet to be taken up and handled. Pull right and left sharply a few times with the War Bridle, or sufficiently to make the colt come around without being pulled upon; then step back, holding the cord rather tight, pass the right hand lightly down the hip and leg to the fetlock, and lift the foot gently; at the same time, with the

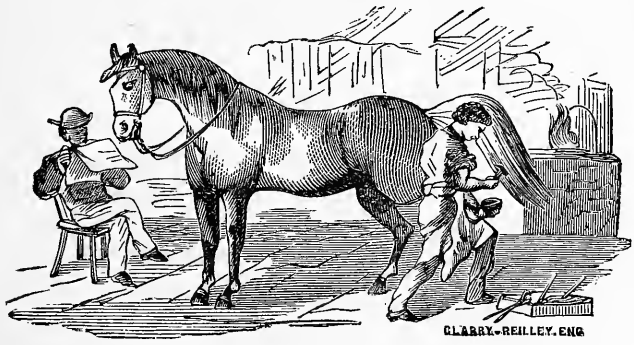


Fig. 177.—As the horse will stand after treatment.

left hand, press hard against the hip, so as to throw the weight of the body upon the opposite leg, which will enable taking up the foot more easily. If sensitive, lift it but a few inches at first, and then let it rest again upon the ground; then again slide the hand lightly down the limb, and lift a little higher than before, repeating until in a position to rest upon the knees with the gambrel under the arm. With the right hand hammer the foot lightly, put it down and take it up a few times, then stop and caress.

This point made, bring the foot gently forward, in position as if to clinch down the nails. Should the colt at any time jerk or pull the foot away, let go and give a few

sharp pulls with the cord, and go on as before until the foot can be taken up and hammered upon as desired. The opposite foot must be treated in the same way; then take the fore feet. Rest the left hand upon the shoulder, pass the right lightly down the limb to the fetlock, and at the instant of lifting the foot, as before explained, with the other hand press upon the shoulder to throw the weight upon the opposite leg, which will relax the near one, and make it easy to be taken up. Take up and let down a few times, tapping it lightly, and repeat until it can be pounded upon quite hard; then bring forward upon the knees, and proceed the same as before. The foot should not be held at any time so long, or grasped so awkwardly, as to produce fatigue, or frighten so that it would excite inclination to pull away. By being careful at first, but little difficulty will be experienced in making any ordinary colt submit the feet to be taken up and hammered upon as desired. Should the colt be so wild or vicious as to resist the War Bridle, subject to Second Method until so dizzy and helpless that he stops turning.

While the head is still tied around, as before, rest one hand upon the hip, pass the other quickly from the gambrel down to the fetlock, and lift the foot forward. If submitted to, but little more need be done; but if resisted, send around again until helpless, when the effort should be repeated. If submitted to, untie the halter and repeat the handling. Sometimes, after the head is given freedom and the dizziness passes off, the horse may, unexpectedly, kick violently. To avoid being struck, stand well forward, and far enough out from the hip to be out of range of the foot, and, as before, while balancing the body by resting the left hand upon the hip, with the right cautiously, but firmly, lift the foot forward. Should the horse kick, the hand will simply be carried back with the foot without doing harm.

When the foot is freely submitted, step forward to the usual position, so as to come well under the hip, bringing the foot upon the knees. If in this position he kicks, the foot will be simply thrown out and back from the knees, so that there will be no danger of accident. If the case is still unmanageable or doubtful, put on the Double Draw Hitch Form of War Bridle. While an assistant is holding the cord (see cut 178), buckle a rein, or tie a cord around the foot below the fetlock. Get directly behind, out of

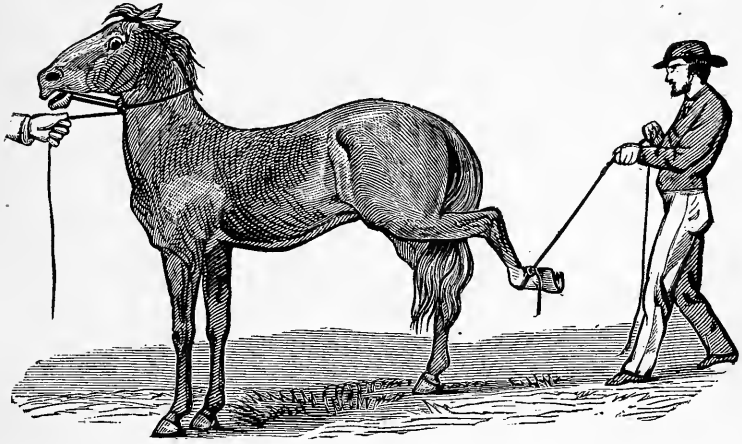


Fig 178.—Pulling the foot back while controlled with the War Bridle.

reach, and pull the foot back. This will usually be responded to by a sharp kick, or the foot pulled forward with energy. If so, let the War Bridle be jerked upon once or twice, as punishment. Repeat the pulling at short intervals until the foot will finally be given back freely, and when given freedom, it will be rested upon the toe with the muscles relaxed. Now step forward to a point a little back of the shoulder, with one hand take a short hold of the strap, at the same time resting the other upon the horse's back, and pull the foot forward repeatedly. Usually this will be submitted to; if so, catch the foot and bring it forward and

back, to test its flexibility or submission to control. If, however, it is resisted, or the control is still doubtful, pass the strap over the neck, back between the fore legs, and up under the part over the back. Pull short enough to bring the leg well forward under the body, and tie into a half-hitch. This will bring the weight and pulling of the leg directly across the back and neck in a way that disables greatly.

Next, touch or lightly slap the leg until it is submitted

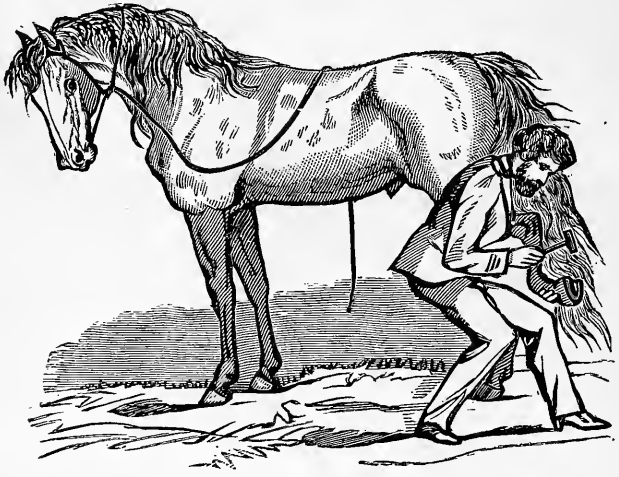


Fig. 179.—The colt as he will stand after treatment.

to freely, when more freedom should be given by giving loose a little. When freely given to the hand, untie, carry the leg back and forward to test it, when take in both hands and pound upon it, as before explained. After the foot is submitted unconditionally, keep on handling for some time, giving apples, etc. The opposite foot must, practically, be treated in the same manner, and more or less, according to the degree of resistance.

The blacksmith shop is no place in which to handle colts. The fire and hammering add to the general excitement, and greatly increase the difficulty of making the

horse submit the feet. In addition, it is not the blacksmith's duty to expose himself to be injured or hurt, or to lose time in trying to shoe a wild, unbroken colt. Such colts should always be handled at home until proved gentle, which, by following out the instructions given, will not be found a difficult task. I have often found horses that, in consequence of fear or abuse in a blacksmith's shop, could not be shod there. I will refer here to but one of many cases in point.

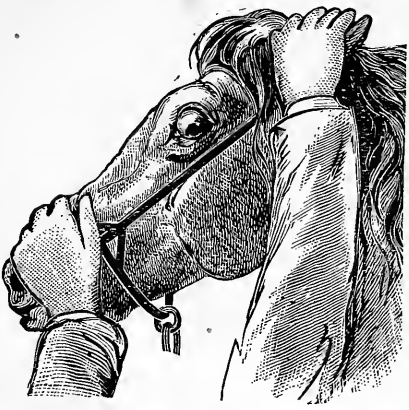


FIG. 180.—Simplest method of making a nervous horse stand to be shod.

During my early experience, while at a town in Southern Pennsylvania a horse was brought forward for treatment that could not be shod, his particular cause of resistance being fear of the blacksmith's leather apron. When first taken to the shop for the purpose of being shod, the hammering and flying sparks greatly excited him, and as the smith came forward to take up his foot, the appearance of his leather apron became an object of intense fear. In a short time he became so violent that he would not allow any man with one on to approach him.

FIG. 181.—Blindfolding a nervous horse to be shod.

The owner and smith concluded they had a sure thing

in this case with which to beat me, and came twelve miles for the purpose, leading the horse. They said they would both join the class provided I would make the horse sufficiently gentle to allow a man with a leather apron on to go near enough to handle him. At the same time they told their friends secretly that I could do nothing with the horse, and that they came there for the express purpose of showing me up as a humbug. All felt so sure that the horse would beat me that a large number joined the class to see

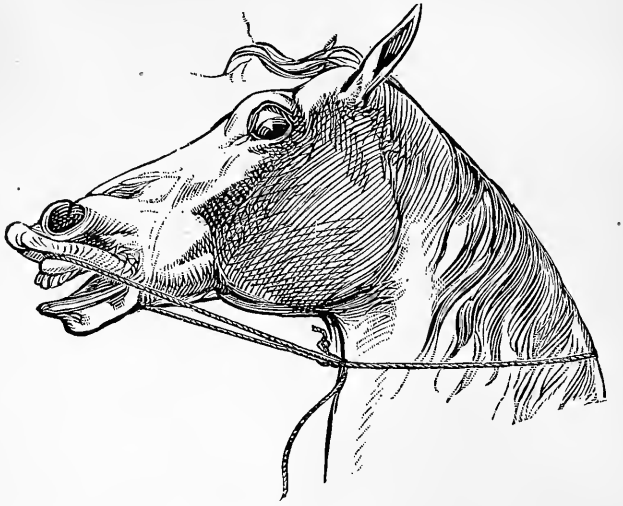


FIG. 182.—As the cord may be adjusted for control of simple cases.

the fun, expecting of course they would get their money back. I subjected the horse quickly to the Second Method and War Bridle, not requiring in all more than six or eight minutes, when he could be handled without the least difficulty, being perfectly regardless of the apron. I ordered the horse taken to the shop, and accustomed to the sparks and hammering; to be treated kindly, giving apples, etc.; also to be shod a few times outside the shop to make sure of his docility.

To show the simplicity of what may appear difficult, it is worthy of mention that at the same place, a party of three men—a father and two sons—were employed over three hours in trying to lead a six-year-old colt, pulling, pushing, and backing him by main force, to the place of exhibition, a distance of not over one-fourth of a mile. The conditions were that I must make him follow me freely across the barn floor. A few sharp pulls with the War Bridle were sufficient to make the horse run after me, not requiring in all more than two minutes, proving so conclusively the ignorance and bad management of the parties that they were laughed at and ridiculed by the entire class. (See cut 106; also Case 4, in "Subjection.")

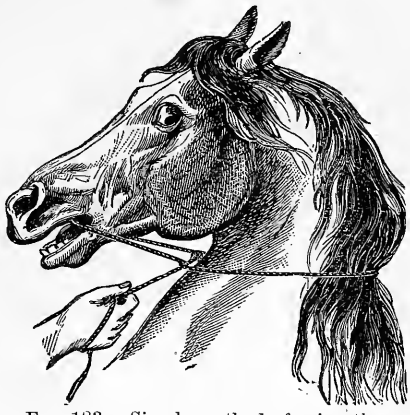


FIG. 183.—Simple method of using the cord for the control of horses bad to shoe, harness, etc.

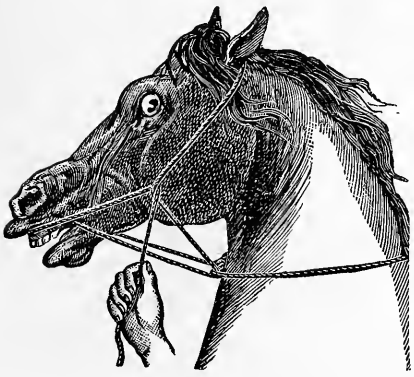


FIG. 184.—Method of putting on the cord when the horse proves very stubborn.

CONFIRMED IN THE HABIT.

As the main object in the management of most cases is to make them submit to be shod with the least trouble, I will first give the simplest treatment for doing so. Indeed, this simple treatment, with a little care, will often be sufficient for the control of even very bad cases.

If the horse is very sensitive and excitable, but naturally gentle if given his own way (they are usually rangy, good-tempered animals until excited or irritated, when they become exceedingly obstinate in their resistance, perhaps simply pulling the foot away at an unguarded or critical moment, kicking or throwing the poor smith across the shop), a great deal, of course, depends upon the good management of the shoer, but as much on the aid of the owner. Try the following course: When the smith is in position, and ready, his left hand resting on the horse's hip, let the owner, or some good, quiet man, catch the horse's ear with one hand, squeezing or twisting it a little, with the other stroke the nose, or grasp the muzzle, and hold firmly but gently, at the same time talking to the horse kindly. If there is resistance to this, try blindfolding. Tie a blanket, or something convenient, over the eyes, at the same time rubbing the nose, etc. With care on the part of the shoer, cases that have proved very difficult to shoe will submit at once to be shod as desired. If these expedients fail, put on the cord, the First, or Double Draw

FIG. 185.—Showing the manner of letting up on the cord as the horse submits.

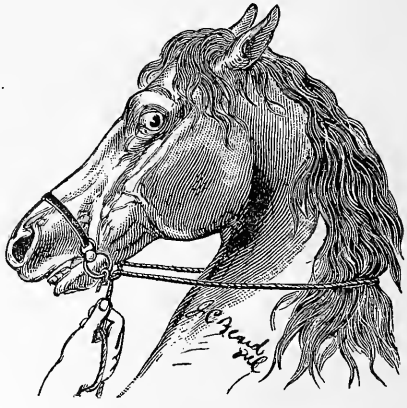


FIG. 186.—Four-ring Bit. Method of pulling down on the cord.

Hitch Form, and make the horse feel its power by giving a few sharp pulls right and left. Then step back to the hips, pull the head around a little, keeping the cord taut, and take up the foot, punishing instantly for any resistance. Or, stand to the head, and keep the cord drawn rather tight to hold the attention of the horse while an assistant takes up the foot. If the horse is very stubborn, bring the second turn of the cord over the upper jaw, under the lip. This part being very sensitive, a slight pressure hurts so severely as to disconcert the horse sufficiently to make him submit. Or the cord, Second Form, can be put on, with the loop brought over the upper jaw, and pulled sufficiently taut to force submission. In either case, gradually let up as the horse submits. In no case should the cord be held tight more than half a minute at a time.

The four-ring bit properly used will sometimes work extremely well in making a horse submit to be shod. The bit is put into the mouth with an ordinary head-piece, and the strap closely adjusted across the nose. Now tie the end of the cord to the near ring, pass it around and tie to the opposite one back of the jaw; then pass over the neck, well back, and down behind the jaw, as for Second Form of War Bridle. Now by pulling down upon the cord the joint of the bit will be forced up against the roof of the mouth, which hurts so severely that the horse is at once disconcerted, or disabled sufficiently to permit the foot to be taken up. The amount of pressure, or force of the pulling, must be regulated according to the resistance. If there is submission in a short time, the lightest pressure will be sufficient to make the horse stand quietly to be shod. There is this to be said about this method of treatment, as well as that of the War Bridle: if it works at all, it seems to work so well as to leave nothing to be desired. But if it fails, the failure will be equally marked. It is,

however, but just to add that though in many cases failing, the power of the War Bridle or four-ring bit, when properly used, is sometimes wonderful, the horse at once submitting unconditionally.

Tying the head to the tail so as to keep the head bent around pretty well, will sometimes make a horse submit to be shod, but not often. (See cut 42.) This means, with that of putting the cord under the upper lip, which I copy below, has been of late so extensively published as an infallible means of making the most vicious horses stand to be shod, ridden, etc., that I think it necessary to give some explanation of them here :—

"Mastering Vicious Horses.

"Recently an exhibition was given at the corner of Ninth and Howard Streets of a new and very simple method of taming vicious horses, which is claimed to be superior to any in use. The first trial was with a kicking and bucking mare, which, her owner says, has allowed no rider on her back for five years. She became tame and gentle in as many minutes, and allowed herself to be ridden about without a sign of her former wildness. The means by which this result was accomplished consisted of a piece of light rope, which was passed around the front jaw of the mare, just above the upper teeth, crossed in her mouth, and then secured back of her neck. It is claimed that no horse will kick or jump when thus secured, and that a bucking horse, after receiving this treatment a few times will abandon his vicious ways forever. A very simple method was also shown by which a kicking horse can be shod. It consisted in connecting the animal's head and tail by means of a rope fastened to the tail and then to the bit, and drawn tightly enough to incline the horse's head to one side. It is claimed that it is absolutely impossible for a horse to kick on the side of the rope. At the same exhibition a horse which for many years had to be bound on the ground to be shod, suffered the blacksmith to operate on him without attempting to kick, while secured in the manner described."

This is from the same piece as the Maine man's method of breaking a balking horse. (See "Balking.") As I brought both these methods of treatment into use, and have had almost unlimited experience with them, I am able to determine their value with more accuracy than it is possible for inexperienced persons to do. While they will secure the control of many, even quite bad cases, as explained, they cannot by any means be depended upon for the control of

really difficult cases. They were used by me almost daily under circumstances like the following:—

After subjecting a horse to the Second Method, while still tied, the effort would be made to take up the foot; but it was rarely, unless thoroughly subdued, that the foot would be submitted. The same is true of the cord or War Bridle. It was often a matter of considerable importance, to be able to control some cases quickly, and I would, as an experiment, try the most simple and direct methods of management. I have experimented in this way thousands of times before, after regular subjective treatment with the War Bridle, and cannot regard it as more than palliative, since it would, in a great many cases, prove entirely inefficient. Even with the Double Draw Hitch, its most powerful and effective form, which, until recently, we kept a secret, and used only as a reserve, we could not depend upon it. Fifteen years ago the War Bridle was my principal resource for controlling colts and bucking horses to ride. But it is entirely inferior to the Second Method for the control of bad cases. Simply tying the head to the tail, and sending around until dizzy, then mounting from the outside, so as not to get entangled by the strap, the horse will be found so helpless that he cannot buck; should he attempt it he would simply be carried around the more rapidly until submissive.

The matter of breaking bucking colts and horses was a common, and, sometimes, a very formidable difficulty to meet. One of the worst cases I ever came across was a ten-year-old mule in Central Mississippi. It was proved absolutely impossible, even by the restraint of any kind of rigging, to mount or keep upon this brute's back. In fact, the case was so bad, and the people felt so sure that I could not ride her, that they made up a large class for me, knowing they would get their money back if I failed to do so.

I simply subjected her to the Second Method sharply, and in less than fifteen minutes rode her as I pleased. This would have been impossible by the palliative means referred to. She was a good representative of the mustang nature. This is the only method of treatment by which a strong, determined bucker can be safely and easily mastered.

It was quite frequently the case that we would have for our main subject a horse that was particularly bad in shoeing. As a test of success, it would be often required that the horse be shod in a blacksmith shop. Now after being subjected to regular treatment there would usually be but little trouble in taking up and hammering upon the feet as much as desired at the place of treatment; while we would sometimes have all we could do, even by the most severe use of the War Bridle, to handle such in the shop. I will refer here to one case in point out of many hundreds that could be mentioned:—

When at Taunton, Mass., the only subject for treatment was a very bad horse to shoe. The case submitted readily to the Third Method. The class insisted, as a condition of being satisfied, that the horse should be shod next day at the blacksmith shop. I had a very large class at this place, and a failure in doing this would have given them sufficient reason to demand a return of their money. There was no opportunity for me to handle the horse in private, as the class took particular care that I should not have access to him in the meantime. Notwithstanding the Double Draw Hitch was used upon him to the utmost of what could be done with it, we barely succeeded in making him submit to be shod there.

Before leaving New York, (referred to in "Personal Experience") Mr. Wilkins, the owner of the horse subdued as a special test, called upon me and requested me to assist him in having the horse shod, stating that he had become en-

tirely unmanageable in this respect. The special point of this horse's peculiarity was in his obstinacy of resistance. When he once found he could resist his foot's being taken up, he would afterward fight at every attempt to take it up, kicking back, and striking the ground with all the force of a sledge hammer.

I depended upon the Second and Third Methods for the subjection of this case, which required a little more than half an hour to effect his entire submission. I told the owner, who was a good horseman, that he ought to be able to make him stand to be shod by the aid of the War Bridle, as the horse, after being treated by me, had remained perfectly gentle up to this time.

Said he, "I tried it, and failed; I would like to see you do it." Upon trial, though I used the cord to the utmost limit of its power, I was barely able to make him stand to be shod,—a point not at all difficult by the regular subjective treatment. It was, in fact, a very common occurrence for me to find old scholars, and others who had indirectly learned, and become practiced in, the use of some special method of control long practiced and taught by me, claiming to be able to control any living horse by it, whether balky, a kicker, or bad to shoe, etc.

Shoers who had used the War Bridle with success were the most common. In proof of their ability to do this, reference would be made to some special case which they had easily shod that had before proved unmanageable. This success would inspire such confidence in the method that they would honestly think themselves able to control any horse, however bad he might be.

I will refer to an incident in point: When in Buffalo, N. Y., in 1869, where I had been detained for some time on business, a well known veterinary surgeon, Dr. Wm. Somerville, 27 Erie street, informed me that there was a

young horse-shoer near there who claimed to have a secret by which he could make any horse, no matter how vicious, stand gently to be shod. I stated that it could not be done; that the man had undoubtedly learned some simple method of control which gave him power to shoe many quite bad cases; but that really bad cases could not be controlled by any such treatment. It was arranged that I should be advised when the man had a bad case to shoe. Upon being notified, I called, and stated to the man that if he had any point which I did not understand, by which he could make a horse stand to be shod better and easier than I was able to do, I would give him $100 for the secret. His control was obtained by the four-ring bit, which was nothing new to me. I told him that his over-confidence would cause him trouble when he chanced to get a really bad case to shoe, and was not surprised when soon afterward informed by the Dr. that in trying to shoe a bad horse the man got kicked across the shop, and was seriously hurt. It was considered a good joke upon the man, as the result was just as I predicted.

A great many other palliative means might be mentioned; such as tying a rope or rein to the foot and passing it back through a ring attached to the tail, so that the foot can be pulled back and held up. But should the horse resist very hard, there is danger by this method of the horse's being seriously strained or injured. Another method is to buckle a strap around the foot below the fetlock, and around the leg above the gambrel, which keeps it flexed. This is also objectionable because of the severe struggle to resist restraint, and the danger of falling.

Regular Subjective Treatment.

In breaking up the habit, very much depends upon the disposition of the horse, and the treatment pursued. In most cases the following will be found easy and effectual: Subject to the Third Method, using more or less pressure, according to the case. While the cord is on, attach a strap or rein to the hind foot, and pull back as previously explained. At first there will usually be great resistance, the horse kicking with great spitefulness, or pulling the foot forward energetically. But however much he may resist at first, it is no indication of failure. Simply keep pulling the foot back at short intervals until there is no resistance. When given freedom, it will be rested upon the toe, then pull forward and back as before explained. In some cases it may be necessary to tie forward by bringing the strap over the neck, back between the legs, and making fast to hold the foot firmly until all resistance is overcome. Treat the opposite foot in the same manner.

All this should not require more than ten or twenty minutes. Should the horse warm up and resist it determinedly, increase the pressure and repeat. In some very rare cases I have been compelled to use the pressure of a hundred feet of cord before succeeding. It is well to state that some of these cases were among the most desperately vicious horses to be found. It was not unusual for the writer to find horses that it was impossible to shoe except by tying down or fastening in a frame. If in traveling there were any such cases anywhere within the radius of his visit, they were almost sure to be brought forward with the hope of beating; but it was rarely they would not submit unconditionally in from twenty to thirty minutes by the treatment given.

To give an idea of the power of this treatment when

properly applied, I will refer to its effects upon a few special cases.

At Bellows Falls, Vt., a paper-maker owned a fine horse, which, though otherwise very gentle, was extremely hard to shoe. A traveling horseman of much experience and a great deal of pretension, visited the place and made a small class. The owner, wishing to have his horse broken, brought him in to be experimented upon. According to the gentleman's statement to me, this man

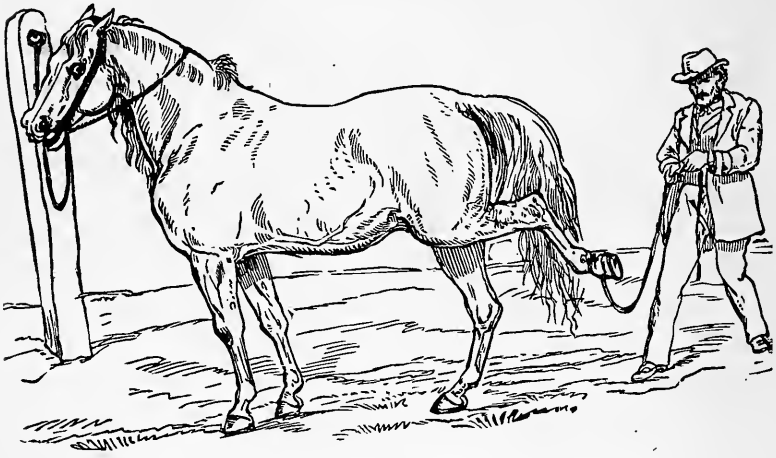


Fig. 187.—Pulling the foot back to test the horse's submission.

worked with the horse about half a day, injuring him very severely,—in the owner's language, "almost killed him." The result of it all was that the horse beat the man completely, and was more reckless and determined in his opposition than before. I requested the gentleman to let me see the horse. Upon examination, I found him to be finely bred, naturally gentle, but if excited or badly managed he would be extremely difficult to control. I told the owner we would have no difficulty at all with the horse, and succeeded in rendering him perfectly gentle in about fifteen minutes.

The day following, at the next point we found an eight-year old mare, considered impossible to shoe. The temperament being suitable, we subjected her to Second Method and War Bridle, which made her entirely submissive in about ten minutes. The next day, at Putney, Vt., the kicking, runaway horse referred to as Case No. 1, in chapter on "Kicking," Illustrative Cases, was presented. Reference is made to these consecutive cases to show the frequency with which exceptionally vicious horses were

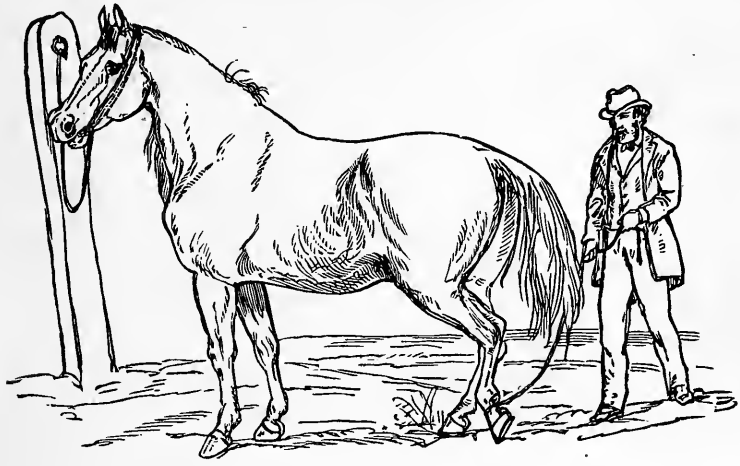


FIG. 188.—As the foot will be rested upon the ground after submitting.

brought for experiment and the success in their subjection.

In the management of many cases, either or both the First and Second Methods may be used with advantage in connection with the Third Method, but it should always be done at home where there is time and privacy to apply and carry out the treatment properly.

LEANING OVER.

There are occasionally horses that will allow the foot to be taken up, but will lie down or lean over upon the

blacksmith while it is held. Usually a sharp lesson with the War Bridle, repeating it for each recurrence of lying over, until he learns to stand without leaning, will be sufficient. If this is resisted, subject to Second Method. While the head is tied around, take up the foot and test until he will stand squarely. If there is any inclination to lean over after the head is given freedom, punish with the cord, which should be sufficient. Sometimes it is advisable to stand at the head ready to punish, while an assistant takes up and holds the foot as if to shoe. Though a horse may for some time be sullen and persistent in leaning over, it is not usually a difficult habit to overcome. Once compelled to stand, it is seldom necessary to repeat the lesson.

It should have been stated in the proper place that there must be no effort to push against the quarters; but the moment there is an effort to lean over, the foot should be instantly dropped, and the punishment with the War Bridle made somewhat severe, which is to be repeated until there is submission, or subject to Second Method, as explained, which should in all cases result in breaking up the habit.

CHAPTER VI.

BALKING.

If a naturally gentle horse be hitched to a tree or other immovable object and commanded to pull, he would at first pull all he could; the second time he would not pull with quite so much confidence as at first; while the third or

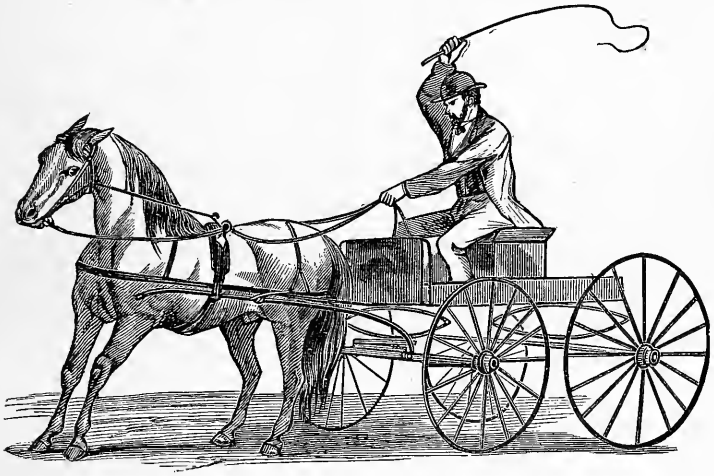


Fig. 189.—As the horse will sometimes stand, regardless of the most severe whipping.

fourth time he would pull but little, or perhaps not at all. To whip and urge him now to pull would only start him in the habit of balking. Or, if a horse is overloaded or so exhausted he cannot pull the load, and in this condition is whipped and urged to go, he will balk. Or, if he starts too quickly, and is pulled back violently and whipped till

confused and excited, the habit of balking is begun. Hence we see that this habit is purely acquired, the same as kicking and other habits, for which there can hardly be a reasonable excuse.

Balking horses are of two kinds: Double balkers and single balkers. Balkers in single harness are divided into two classes: First, horses that sulkily refuse to go at all; second, those that will not pull unless given their own way. The mule and ox, and horses having similarly patient, cold-blooded natures, have little inclination to this habit, while nervous, warm-blooded, fine-grained horses are easily taught the habit.

In teaching a colt to drive without balking, let him go slowly at first and as he pleases. There should be sufficient room so as not to require short turns; as pulling short around before learning to rein is liable to confuse and irritate him to balk. If there appears any inclination to stop, or if he refuses to go, the driver should sit quietly in the wagon, fix the harness, or do anything to take up time until the horse gets over his fret. If he does not feel sure of his going, let him get out and move the colt a little to the right or left, speak to him kindly, and it is rarely that he will not move off without knowing that he has balked. If he has an irritable disposition, and appears unwilling to stand, particular care should be taken to teach him thoroughly the lesson of stopping and starting, as described under the head of Colt Training. If the habit is only partially learned, and especially if the colt is of a warm-blooded nature, it is by all means advisable to win him out of the habit by kind treatment, if possible. I will illustrate by referring to a peculiar case in my early experience:—

When in Myersburg, Pa., referred to in "Personal Experience," I often traded horses, and not unfrequently got

very bad ones. Among them was a small pony mare, nine years old,—a confirmed balker. This I did not know until after I had traded for her. I harnessed her carefully in shafts, but she stood stubbornly. Upon touching her with a whip, she threw herself down. I saw at once that she was one of the very worst of balkers, and that in the effort to break her she had been subjected to a great deal of whipping and abuse. I unhitched her, got her up, tied up the harness and reins, went into an orchard close by and filled my pockets with apples. I then led her to a back road not much used, and standing near her head with a switch in my hand, touched her lightly over the hips, saying, "Get up!" This caused her to start. After going a few steps, I called, "Whoa!" at the same time pulled upon the reins, when she stopped, for which I gave her a piece of apple, and stroked her nose and head. This I repeated until she would start and stop at command.

This point gained, I next untied the reins, and while standing at the shoulder and holding the reins slack in my hands, I repeated the command for starting, touching her for a few times lightly over the hips. At each repetition I stood a little farther back until able to get directly behind her, and make her go or stop at command. I then took her to the top of the hill and hitched her up. This was the critical point of the experiment, and I did not propose to take any chances of failure. I commenced again at her head, rewarding as before, until I was able to get on the step, and finally into the wagon; at each repetition being careful to reward her, even getting out of the wagon to do so. It was soon quite amusing to see how eagerly she would reach round her head in anticipation of her reward. Now I required her to go a little farther at each time of starting until able to drive fifteen or twenty rods; then I took her out of harness, and put her in the stable.

The next day I hitched her up again, and commenced cautiously as before, spending only a few minutes, but requiring her to go farther and faster until on a sharp trot or run. I repeated this lesson again next day until she could be driven as desired. The point of success was that I made the lessons short, and was careful not to do more at a time than she would bear. I could even make her stop in a mud-hole and stand as long as I wished her to, and then at command she would pull out gently. Those who knew the mare were quite surprised to see me drive her, and regarded it a great feat. In reality it was no feat at all, but merely the result of a little patient management, which it is not difficult for any one to practice. This mode of treatment is especially adapted to nervous horses that will not bear pushing.

FIG. 190.—Slow, patient nature—not disposed to balk.

There is nothing that so tries a man's temper and patience as a sullen balker. One may resolve to be patient, but after reasonable efforts with kind treatment, and failing, he determines to see what a whip will do. Some men in anger will strike a horse over the ears, twist and pull his tongue severely, and yet not be able to make the animal flinch. A balking horse of spirit, thoroughly maddened by such treatment, may resist the most severe punishment. Horses have been known, when excited in this way, to sullenly stand even the burning of straw under them. The skin on the legs and body is so thick, and has so little sensibility, that when the blood is thoroughly warmed up,

the severest whipping or pounding can be scarcely felt, and it becomes only a means of intensifying the habit. The usual method of whipping, kicking the belly, hitting back of the head with a club, etc., while often liable to kill or seriously injure the horse, has no beneficial effect.

Sometimes very simple treatment will start a balky horse; as, kicking the leg lightly below the knee until he lifts his foot; passing a string over one of his ears, and tying it down; letting the horse inhale a little ammonia or red pepper. These are very common tricks, and will sometimes disconcert a horse sufficiently to cause him to start. The following has been considered a great secret in the treatment of balkers, and will in some cases work with considerable success: Take the oslets or warts growing inside a horse's leg, dry and grate them fine and keep in a tightly-corked bottle, as they lose their strength quickly and evaporate on being exposed to the air. About three-quarters of an hour before the horse is to be driven, blow a thimbleful from a quill into his nostrils. This has a soothing effect, and will cause the horse to go off all right.

An old man who had been a successful horse-breaker, told me that he had used it forty years, and never failed to make a horse go as he desired with it; that he seldom repeated it more than two or three times. When a horse takes a dislike to other horses and kicks at them, the oslets from a vigorous horse, or from the one objected to, used as above, will in most cases overcome such aversion. (See Medicine in "Subjection.")

Sometimes stepping before a horse and moving him to the right or left a little, and stroking his nose, or pulling his ears gently, etc., will cause him to start. Grasping both nostrils with the hand to prevent his breathing until he struggles for freedom, and turning him a little sideways at the instant of letting go, will frequently start quite a

bad horse. Tying the tail to the cross-piece will frequently start him, as a horse will always pull by the tail. Blindfolding is one of the simplest and best methods of starting a stubborn balker. After being blindfolded, he should be allowed to stand a few minutes, then move him right and left a few times, say, encouragingly, Get up, and the horse will usually pull steadily against the collar and move off all right. Tying up the fore leg, and compelling him to stand on three legs till tired, will usually be a very effectual means of starting a balker, and frequently after a few repetitions it will break up the habit. This method works best on nervous, impulsive horses.

A Maine Man's Method.

"When a horse balks, take him out of the shafts, tie the bridle rein into the tail short enough to bring his body into a half circle, and make him go around four or five times. This will make him dizzy; then put him in shafts and he will go off all right. If one lesson will not break him, repeating it will be sure to do so."

This is not so; it is nothing more than merely palliative, which will, it is true, frequently enable starting a balking horse, but is not by any means adequate for breaking up the habit. It will be seen farther on that it is part of my regular treatment for this habit. I invented it and taught it in that State nearly twenty years ago; and the idea of managing balky horses in this way was given by me as a simple method of starting the horse, not of breaking up the habit.

A mare in the habit of balking, although occasionally driving well for weeks at a time, one day got into one of her balking tantrums. Her owner, becoming angry, determined to kill her. Taking a gun from the hands of a sportsman who happened to be standing near, he fired the

charge of shot into the body. It did not kill her, and on recovering, she was put to work as usual. It was found afterward that whenever she balked, simply pointing a stick at her was sufficient to make her start at once.

A horse employed in drawing limestone to a kiln from a quarry close by, was in the habit of balking. One day he refused to pull, and, in defiance of the strength of several men who caught and held the wheels to prevent the accident, backed over the precipice, falling about thirty feet. The cart was broken to pieces, but the horse escaped with slight injury. He was put to work as usual, but was never known to balk there afterward.

About ten years ago a member of my class gave me the following particulars of a case: He had a mare that would sometimes work well for a week, and then, perhaps, at a critical time would stand stubbornly, resisting all effort to move her. One day while drawing in oats she balked. After working with her a long while, he resolved that she should go or starve. He drove a stake down in the ground, and tied her to it; then putting a sheaf of oats a few rods distant he went off. This was at ten o'clock in the morning. About five o'clock, he returned and tried to start her, but she would not go. He tied her again to the post, and let her stand until morning. Then he unhitched her, took the reins and tried to start her, but she would not pull. During the afternoon, he tried her again, when she went. Upon reaching the sheaf of oats, he let her eat it. He now drove her home, unharnessed and fed her, then put her to work. She worked all right for a few days, and then balked again. This time he let her stand forty-eight hours, then fed her, when upon trial, she went all right, and he kept her at work. She never balked afterward.

Another man of much tact with horses informed me

that he always succeeded with balkers by the following treatment: When a horse balked, he unhitched and put him in the stall, and stationed a man behind him with a whip. Every minute or two the man tapped the horse on the quarters with the whip, just enough to annoy him. This was kept up for twenty-four hours, the regular feed and water being given. If he refused to go upon being tried, he was put back, and the same treatment kept up to prevent his going to sleep, until he would go as desired. It was rarely, after one or two lessons of this treatment, that a horse would not work in all right. Innumerable instances of breaking very bad horses in this way have been brought to my notice by horsemen who have been members of my classes.

It does no good, practically, to subject a horse to treatment in a barn, or where not accustomed to balk. It should be carried out as nearly as possible where in the habit of resisting. Any means that will disconcert a horse when he balks is a step in the right direction. But if we have in addition power to move him as we wish, we have the key of compelling the entire submission of balkers that have defied the greatest efforts to break or drive them. This we can obtain by the Second Method, and other treatment here given.

Regular Treatment.

The course I usually pursue, and which I advise, is about as follows: Put into the wagon, ready for use, a good strap halter, a War Bridle, a light bow whip that will not break, and some good apples. Hitch up the horse as if to make a journey, and let him go as he pleases until a level, isolated piece of road is reached. Now if he does not balk, provoke him to do so. Get out quietly, unhitch him, tie up the reins and tugs, put on the halter, over the

bridle, and subject him to Second Method both ways until off his balance. If hitched up now, he will be likely to go off all right, but will be apt to balk at some future time. As the object should be to effectually break up the habit, it is necessary to make the lesson very thorough.

This treatment makes a powerful impression upon him in two ways: First, to convince him that there is power to make him move any way desired, which is the point to be established, as he does not know the difference between going sideways and straight ahead. Second, it disconcerts him in the most powerful manner, and thus prevents or overcomes the inclination to resistance. But it is also necessary to create sufficient reserve power to force him to move should he again refuse to go. To do this, put on the War Bridle (First, or Double Draw Hitch Form), and lift him right and left. When he follows promptly, change to Second Form. Now pull upon him sideways and ahead. As he yields, gradually pull more on a line with the body until he will come ahead promptly.

Next, tie up the cord loosely in the terret, take down the reins, run them through the shaft-lugs, and get directly behind. Say, "Get up!" pulling one rein a little, and, if necessary, touch the quarters sharply with the whip. After going a short distance, call, "Whoa!" If he does not stop, force him to do so by a sharp jerk of the reins. Repeat this until he will stop and start at command, then reward by giving some apple. Repeat the driving, stopping, and starting, until he works in all right and is over the excitement of the treatment, then hitch to a wagon, when will come the real test. Stand near, and in a low, gentle tone, say, "Get up!" and repeat the starting, stopping and rewarding, as before, until he will go as desired. If a very bad case, it is necessary to make the impression as thorough and complete as possible, and it would be best to put him

away until the next day, when he should be tried, and, so far as found necessary, the treatment repeated until under good control.

Although the horse may go a few times as commanded, yet, after hitching to a wagon, he may balk again. If so, take down the cord, stand in front of him—a little to the right or left—and give a sharp jerk, repeating until he will go at command. Should this be resisted, which is not at all improbable, repeat the previous course of treatment, which, in some cases, may be supplemented by the other methods of treatment. It is advisable to test the horse hard before putting to regular work. A great point after the coercive treatment, is to win his confidence by giving apples, etc.

Restless Balkers.

If, when a young horse is hitched to a wagon, he is allowed to start as he pleases a few times, he is liable to acquire the habit of becoming impatient, so that as soon as hitched up, if not allowed to go his own way, he may get mad and balk. Or if whipped to start quickly, and then pulled back upon, or if made to stand too long while getting into or out of a wagon, he will acquire the habit of balking. A short lesson in teaching to start and stop, as directed in "Colt Training," would prevent this. As it is a very common as well as annoying form of balking, I will include the details of a simple treatment, which can be easily practiced by any one:—

First, teach the horse to stand with the harness on, as explained to stand with the Breaking Bit; then tie up the reins, give a good sharp lesson with the War Bridle, and put him in shafts. If he balks, overcome it with the War Bridle. If of a quick, nervous disposition, this treatment should be sufficient; but if of a decidedly resolute, plucky

character, regular coercive treatment by Second Method, etc., may be necessary. But as there is usually little inclination among owners to resort to coercive treatment, for the benefit of such I include the details of simple, winning treatment:—

Before putting the horse into shafts, adjust the harness. Get directly behind, with an ordinary carriage whip touch the hips lightly, and say, sharply, "Get up!" After going a short distance, call, "Whoa!" and pull lightly upon the reins to make him stop. When there is prompt obedience, give a little apple, etc. Continue driving and stopping until a good foundation is made for the next step. Next, turn the carriage to face a barn or high fence, and quietly hitch the horse in; then go to his head, caress, talk to him, and give some apple. Be in no hurry, but hold his attention in this way several minutes. When you want him to move, walk ahead a little and say, "Get up!" or "Come!" After going a few steps, stop and repeat the rewarding.

There will be less inclination to rush ahead when a barn or high fence is in front, and you are standing directly before him. In addition to this, his attention is attracted by the apples. In this way repeat until the obstruction is reached, when it will be easy to turn or back short around. Gradually get back opposite his head and shoulders, with each repetition going farther back till the wheel is reached, when mount the step and get into the wagon. Repeat this until the horse is obedient to wait for the driver to get in, stopping and starting as desired. Now drive farther, and take some one in with you as if to make a journey. First, drive where the horse is least likely to resist, but finally in front of the house, or other place, where there has been most trouble. The hitching and unhitching should be repeated, and his attention held as before with apples, etc.,

in the meantime talking, walking around, and rattling the wagon. A little care should be used, especially after idle spells, to hold the attention by giving apples, etc., or have some one stand at his head and talk to him, but not to take up the reins until able to start. If in a barn, keep the door shut until ready to start.

Balking Double.

When a horse throws himself in the breeching sullenly, with his head over the other horse's neck, as if to say, "Make me go if you can!" it will try a man's patience very much, and unless he knows how to overcome the difficulty, he will be likely to retaliate by kicking, pounding, etc., which is likely to do more harm than good. Many horses are led into this habit by badly fitting collars, that either choke or make the shoulders so sore that it becomes painful to push steadily or firmly.

When hitched to a load, care should be used to prevent pulling so hard and long at a time as to get out of breath. Neither should a stop be made in a soft place, or where a steady, heavy pull to start will be required. The team should be kept fresh, and encouraged by stopping often and giving the horses a chance to recover breath. In pulling up hill or very steep places, a good rest should be given before starting. If one or both horses become confused, and balk, let them stand until they recover fully. Then stand in front, take both by the head, and move them to the right or left. It is sometimes advisable to turn them both ways. When you get them to move together, say gently and encouragingly, "Come, boys!" or any word to which they are accustomed. Much depends upon the skill of the driver in bringing them up against the collar with assurance, and in helping them to break the force of the dead pull in starting, by moving partly sideways. If the wheels are sunk

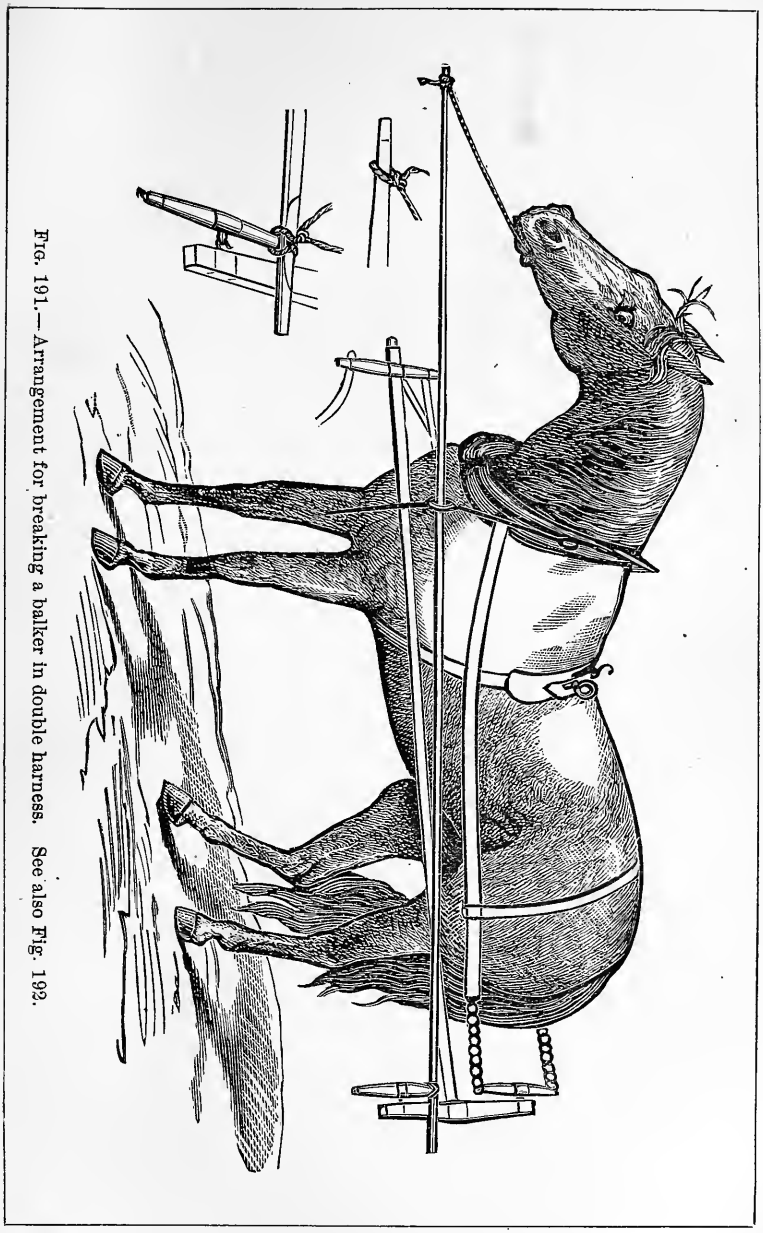


Fig. 191.—Arrangement for breaking a balker in double harness. See also Fig. 192.

in the mud, and the power and willingness of the horses to pull out is doubtful, a part of the load should be thrown off; better do this than run the risk of spoiling the team.

Horses compelled to pull hard should not be checked up. Let the head have full freedom. Sometimes a horse is so stubborn that he will not go, even when not required to pull any load. Always be governed by circumstances, such as the horse's disposition and the difficulty to be encountered. If of a sensitive, nervous disposition, try either of the following tricks, which in many cases will work very nicely: First, tie a strap or cord to the end of the tail, bring it forward between the legs and attach it to the hame ring of the gentle horse, or to the end of the pole. Tie it so short that unless the horse will come forward promptly to his place, he will be pulled upon sharply. Or double a piece of cord (that used for War Bridle is best), pass the tail through the center, and twist the ends of the cord three or four times and tie to the hame ring of the gentle horse, or to the end of the pole. Or, again, a noose may be formed of a small chain or rope around the body back of the shoulders, and tied to the end of the wagon tongue. Now when the gentle horse is made to start, the pull becomes so severe that it startles and disconcerts the balky horse from his purpose, and compels him to go ahead.

After adjusting either of these rigs, start the gentle horse quickly so as to make a sharp pull upon the balker, which will surprise and force him to jump ahead. After a few repetitions, he will jump ahead to avoid being hurt. If the cord under the tail causes the horse to kick, it should not be used.

Best Treatment.

First, put on (under the ordinary bridle) the Second Form of War Bridle, bring it under the head-piece, and, as

in the case of balkers in single harness, pull sideways and ahead, slowly repeating until the horse comes freely without restraint. This lesson should be made very thorough.

To prevent chafing or cutting the hands, gloves should be worn, or the cord may be wound around a piece of broom handle or other stick with which to pull upon. This done, get a stiff pole or sapling about three or four inches in diameter, and about ten feet in length, or so long that it will extend about thirty inches beyond the horse's nose. Bore a hole about two inches from each end, and fasten the large end of the pole to the inside end of the gentle horse's singletree. When the horses are hitched up, pass the War Bridle through the hole at the other end of the pole, and draw it short enough so that when the horse is up in his place there will be little, if any, restraint upon him, and make fast. Next, pass a cord under the pole from one hame ring to the other, making both ends fast, and leaving it just long enough so that when both horses are in their natural positions, there will be no slack. Then pass another cord around the pole and tie both ends into the gentle horse's hame ring, regulating the length so it will hold the pole over the wagon tongue in position. Or have a ring made about one-half to three-fourths of an inch larger than the pole. Attach a cord or strap to connect this ring with the hame rings on each side. This holds the pole in position over the wagon-tongue, and is a better way than the first, but more troublesome to make.

If there are stay chains on the doubletree, they should be removed, so as to give it free play. Get into the wagon (there should be no load) and start the gentle horse quickly. The balker of course refuses to go. The instant the gentle horse starts ahead, if the adjustment is properly arranged, his whole power is brought directly upon the balky horse's head, compelling him to start. Finding he must go, it will

usually be but a very few minutes' work to make him so afraid of being pulled upon and hurt, that he will be the first to start at the command. This accomplished, put on a little loading, gradually increasing it until he learns to use his strength reliably. To fix the impression thoroughly, it may be necessary to keep the pole on a few days.

The Patent Bridle will be found to work very nicely in the management of these cases. The reins are simply reversed, so as to pull ahead instead of back, and tied to the end of the pole.

Overloading.

There is a general inclination among teamsters to overload. This is very common in large cities. While engaged in making illustrations for this work in New York City, I daily passed through Fulton and other streets, and frequently took a side street to avoid witnessing the abuse to which horses were subjected in consequence of being overloaded. It was no unusual thing to see a team whipped severely while pulling to their utmost power, and finally compelled to stop for want of strength to go farther. The team never should be compelled to draw more than it is able to pull easily over the worst parts of the road. This should be the rule. The strain, and pulling in this way, will sometimes injure a horse more in a few minutes than working reasonably hard all day.

When a horse is unaccustomed to work before a wagon or plow, is unsteady and easily irritated, especially in plowing, it is advisable to let him go around a few times before putting the plow into the ground. A little patience at the beginning, in this way, will frequently enable working a horse in gentle that would otherwise be easily spoiled. The following advice is so good, and so much in point, that I include it here :—

"ADVICE TO TEAMSTERS.

"The 'Friends of the Horse' in Boston have issued a circular in regard to the treatment of that animal, which is indorsed by many of the most prominent veterinary surgeons of New York and Boston. The following hints should be heeded by drivers everywhere:—

"First, a man should see that good care is taken of his horse in the stable by being well fed with wholesome food, of cracked corn and oats, with plenty of good hay. Potatoes or carrots may be given once or twice a week to good advantage. See that he is kept clean, warm, and comfortable, with plenty of bedding. A piece of rock salt should always be left in the manger.

"Second, he should see that his harness is kept soft and clean, particularly the inside of the collar, which ought always to be smooth, as the perspiration, when dry, causes irritation, and is liable to produce galls on the shoulder. The collar should fit closely, with space enough at the bottom to admit a man's hand. If too large, it has the bad effect of drawing the shoulders together. On no consideration should a team, or any work-horse, be compelled to wear a martingale, as it draws the head down, and prevents him from getting into an easy and natural position. The check rein may be used, but only tight enough to keep the head in a natural position, and it should never be wound around the hames. See that the hames are buckled tight enough at the top to bring the draught irons near the center of the collar. If too low, it not only interferes with the action of the shoulder, but gives the collar an uneven bearing. Caution should be taken that the girth is not buckled too tight, particularly on string teams, for when the traces are straightening it has the tendency to draw the girth against the belly and distress the horse.

"Third, see that the horse is well shod with a good stiff shoe, always calked at toe and heel on the hind feet, as it is there where all the propelling power comes from when heavily loaded. Keep the feet good and strong by not allowing them to be cut away too much by the blacksmith.

"Fourth, the best of judgment should be used in loading, taking into consideration the condition of the street and the distance to be traveled. Never overload, for by so doing you only distress, strain, and discourage your horse, and do him more injury than you can possibly gain by carrying the extra load. When your load is hard to pull, stop often and give your horses a chance to breathe. No good driver will ever resort to the cruel practice of whipping or beating his horse. A light whip may be carried, but there is seldom use for it. Much more can be accomplished by kind treatment and good judgment. Remember the horse is a very intelligent, proud, sensitive, noble animal, the most useful known to men, and is deserving of the greatest kindness. As many horses have suffered from bad example and inexperienced drivers, the above advice is offered."

This method of treatment makes the breaking of double balkers a very simple and easy thing to do. It gives power to force the horse into obedience without danger or cruelty. I will refer to a few cases, showing the ease with which horses of this character can be broken by the treatment given.

Case No. 1.—At Great Barrington, Mass., an Irishman proposed to join my class and pay a double tuition fee, if I would break his horse of balking. I told him if he would join the class I would teach him the principle, and if he could not make his horse work perfectly gentle when he went home that evening, he could so report next day at West Stockbridge, where I was engaged to lecture, and I would return his money. He was extremely suspicious and incredulous as to my terms, but finally joined the class. The following day he was at the next town, so well pleased that he stated publicly to his friends, that in ten minutes he was able to make the balky horse work as well as the gentle one, and that he could indorse all my statements.

Case No. 2.—At Brunswick, Maine, a man introduced himself to me, and stated that he teamed for a living; that his whole property was in his horses; that one of them balked, making his team worthless; that his only object in going into the class was to break this horse of the habit.

I assured him that I would put him in the way of breaking his horse without difficulty; and that if he could not make his horse work and pull as desired when he went home in the afternoon, on the following morning he could come to me and get his money back. Next day he stated that in less than ten minutes he was able to make this horse work just as well as the other.

Case No. 3.—When in Northern New York, in 1876, a man introduced himself to me as an old scholar, who had attended my lectures a few years before, and desired to come into my class again. He said that he had not had occasion to make any use of the instructions until about a year before, when, in plowing, one of his horses balked. He was for some time puzzled to know what to do, when it occurred to him to try this method of treatment. He had

forgotten the details, but remembered the general plan. He took a three-fourths inch rope, and put it on the Second Form of War Bridle, as described for balking. He next took a rail from the fence, and tied one end to the gentle horse's singletree; to the other end he attached the rope. He then started the gentle horse, and jerked the balky horse out of his tracks two or three times. Using his own language, "That 'ere horse did n't wait to be pulled upon the second time, but pulled as if for life, and never offered to balk afterward, though I put the plow down to the beam."

It was by mere good luck that this man succeeded, considering the crude, imperfect manner in which the treatment was applied. It is hardly safe to risk attempting to make a bad horse go directly in this way. He should be made to yield first to the War Bridle until very sensitive to its restraint, then the pole should be adjusted very carefully. If too short, or so limber that it will bend much, the experiment will be liable to fail.

Case No. 4.—A great many cases illustrative of the effect of the treatment could be referred to, but to save space I will add but one more, selecting as a representative case, one among single balkers, an eight-year-old pony owned in Linesville, Pa. This horse was brought in to be treated before the class. He attracted my attention at once from the fact that when irritated he would resist every effort to make him follow by the War Bridle, by bracing his fore legs with all the stubbornness of a sullen mule. He would balk, riding or driving, and was entirely unmanageable. To test him a little, I put on the War Bridle and tried to move him. He spread his fore legs, and gave his head around to the shoulder on either side, but I could not move him. To undertake to handle him before a class in the small space at my disposal, and with a large crowd of men

around, would have been a difficult and embarrassing task. I had a clear intuition of his exceptionally stubborn nature, and determined not to handle him before a class. I took him outside the town the next morning, and subjected him to Second Method. This treatment he resisted with great determination, and I was obliged to carry it to its fullest extent, and follow with the War Bridle, requiring in all about thirty minutes. Though he was now apparently quite gentle and manageable, he made a bold stand, resisting the power of the War Bridle with such determin-

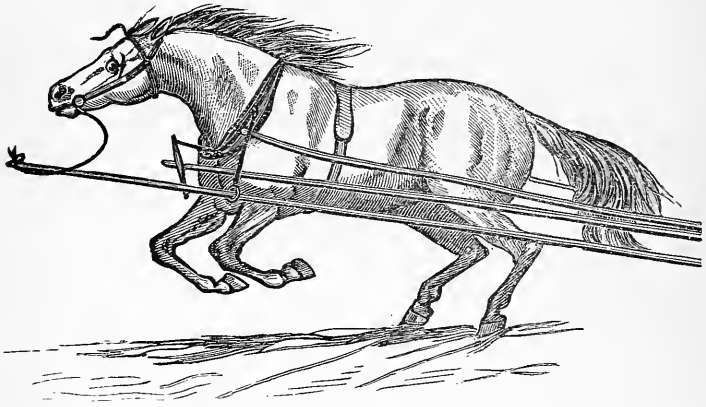


Fig. 192.—Patent Bridle as used for breaking double balkers.
(See page 252.)

ation that it became necessary to repeat the previous treatment, when he drove in all right. The same day he was driven to the county fair at Conneatsville, twelve miles distant, drawing a heavy load. We had ordinary cases offered daily, which seldom required more than ten or fifteen minutes to drive perfectly gentle.

CHAPTER VII.

RUNNING AWAY.

Though the treatment for this habit is, to a great extent, given under the heads of "Kicking," and "Fear," yet in bad cases it is liable to be so troublesome to manage that I deem it necessary to consider it more definitely. The main point is to make the mouth manageable to the restraint of the bit. But if there is much viciousness or resistance, it is necessary to tone it down or overcome it by a general course of subjection, when the control by the mouth can be made more easy and certain. For example: A nervous, excitable colt, so unmanageable as to be both difficult and dangerous to put in shafts by any control that can be brought upon the mouth, after a proper course of subjective treatment which would overcome his fear and excitement, would be found to offer but little resistance to the control of even a common bit. The effect is the same in the management of headstrong, runaway horses, moved by some special cause of excitement, such as the rattling of a wagon or other object.

There are three principles of controlling the mouth: 1. By training, as done with the Breaking Bit; 2. By a form of bit that will prevent the horse from pulling against it, on account of the pain it causes; 3. By obtaining such power upon the mouth and head as will prevent the horse from pulling.

Of course these conditions run more or less into each

other in the different forms of bits given, the point in all cases being to use such a form of bit or method of treatment as will safely and easily effect the control. The Breaking Bit is undoubtedly the best for making a hard mouth flexible. The Half-moon Bit, with check to restrain a dull, stiff mouth, also works well. By pulling upon it, its thin, bearing surface presses against the jaw, and hurts so keenly that but few horses can pull very strongly against it. The Spoon Bit also, in many cases, works excellently by the pressure it throws upon the jaws laterally, thereby making it a good form of bit for cases that will not rein easily, or that will pull on one side. Next, comes the Four-ring Bit, which, with its improvement, is a very simple but powerful means of controlling doubtful, head-strong, lugging horses. It is particularly well adapted for the easy driving of side-reiners. The fourth and last is the Patent Bridle, which has been designed especially for the direct control of head-strong, runaway horses.

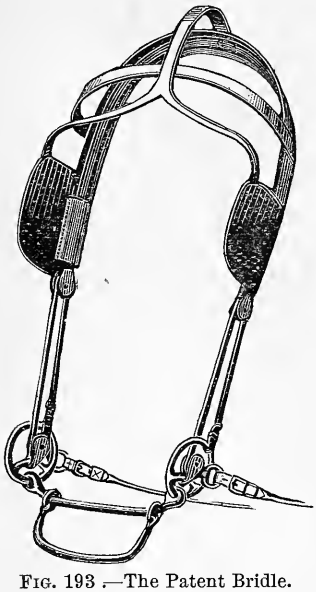


Fig. 193.—The Patent Bridle.

The Power of the Patent Bridle is so great that when properly adjusted it is very difficult for a horse to make any prolonged resistance to it. It acts in three important ways: First, in its most severe form it produces such intense pain in connection with its great power upon the mouth, that it is very difficult for any horse to resist its restraint; second, in proportion to the resistance, if any, it brings such a pressure upon the spinal cord that it be-

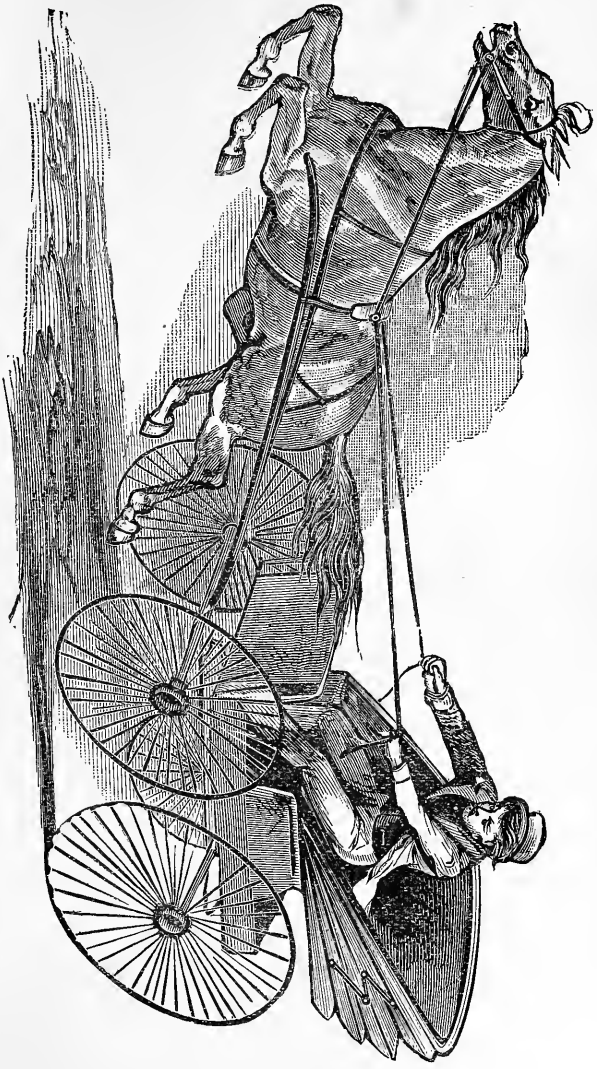


FIG 194.—A lunger as he usually starts

comes impossible to bear up against it for any length of time; third, its impression upon the nervous system is so great that when the struggle is ended the subjection of the horse is complete.

It is proper to add that these combinations and forms of bits may be varied in different ways to an almost unlimited degree. I give what I believe to be the simplest and the best.

A cool, determined man can perform wonderful feats with the Breaking Bit, simple as it is. It requires more work, but is the only bit I have found that works satisfactorily in making the mouth sensitive to the control of an ordinary snaffle bit. It was with this bit I performed my greatest feats, and it cost me a good many years of experimenting to develop its resources. If the mouth is stiff and hard, and it is desired to make it flexible, put on the harness with this bit in the bridle, run the reins through the shaft-bearers, and get directly behind. Now commence; slowly move the horse on a moderate walk, and suddenly call, "Whoa!" following instantly with a quick, raking jerk upon the reins. Repeat at short intervals, until at the moment the command is given, the horse will stop instantly to avoid the hurt of being pulled upon. Then gradually increase the gait to a fast trot or run, making him stop as before.

In most cases the horse will submit in from ten to fifteen minutes; but if badly set in the habit, and plucky, the resistance may be so strong that this cannot be done in one lesson. The difficulty is, if the horse warms up very much, the sensibility of the mouth becomes so blunted or destroyed that he will bear the severest pulling upon without flinching. Then the best way is to put him away until cool, when by a few minutes' treatment the mouth will be found so sensitive that he will usually submit uncondition-

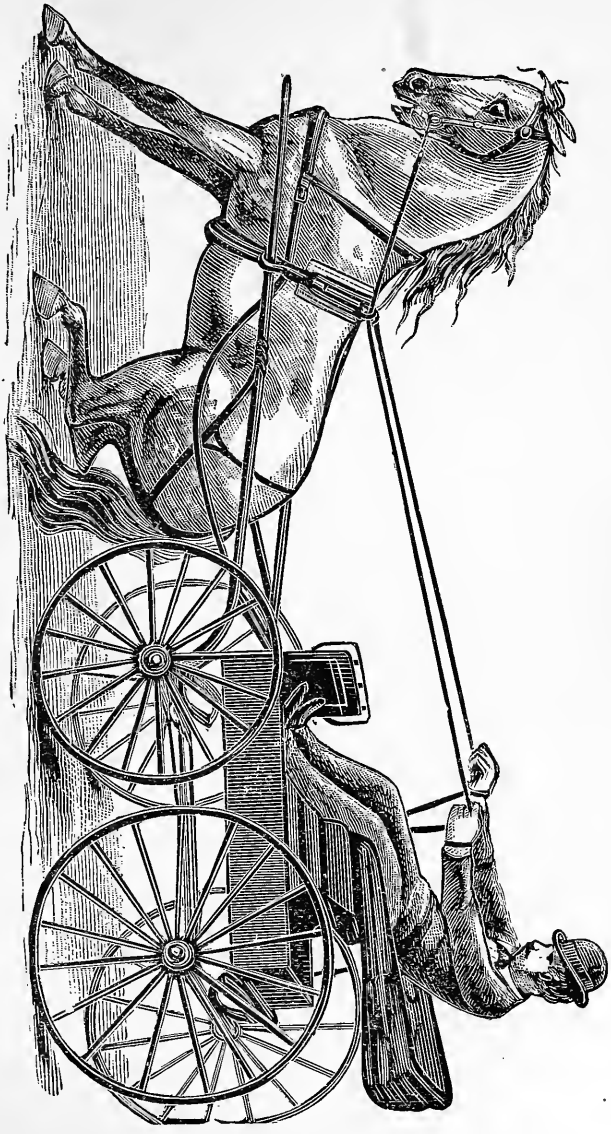


FIG. 195.—Showing the power of the Patent Bridle.

ally. In this way it can be determined how much to do without danger of harm. This point accomplished, hitch to a wagon, and repeat the same treatment. The course pursued by the writer, as before explained, is to let the horse go a few steps, call, "Whoa!" and give a sharp, raking jerk to force him back a little. Repeat, so far as necessary, to establish the point of stopping and coming back, then, as before, let out a little faster until proved safe when on a fast trot or run. This point is to be made very thoroughly. If it is thought advisable, the bit can be left on for a few days in driving, but usually this will be unnecessary; for if the horse is properly trained he can be controlled by an ordinary snaffle bit.

No chances must be taken with a runaway horse. This is a habit that requires thorough breaking up. In my practice, I am not only thorough in these cases, but even extreme in my treatment. No matter how well the horse behaves, I never let up on him until sure of his being entirely manageable under the greatest excitement. My object is to make the horse as safe as possible under any emergency. After the preliminary treatment, I drive on a moderate trot, and gradually up to the point of running, even under the whip, making him stop at command, until perfectly submissive. If at all disposed to be tricky, I test him so thoroughly as to wholly remove all inclination to break over. No matter how sensitive or liable to kick previously, this should be done without even buckling the breeching to prevent the cross-piece coming against the quarters.

This was the secret of the Malone horse, and other runaway horses referred to, proving so safe after being subdued. At one time, while in a crowd, the wagon was crushed against his quarters. At another time one of the couplings of shafts broke, letting it drop sideways upon his

heels,—one of the most severe tests a sensitive horse can be subjected to,—yet at each time he stopped instantly at command and stood perfectly quiet, without showing the least fear. See "Malone Horse, Case No. 2, Kicking."

To give a good idea of the effect of this bit, I will include an account of two average cases broken by its use :—

Case No. 1.

When at Dover Plains, N. Y., a man offered to join my class on condition that I would break his mare of the habit of running away. He stated that when she reached the top of a hill, she would take the bit in her mouth and rush down, regardless of all restraint, and become entirely unmanageable. I simply trained her with the Breaking Bit about twelve minutes, when she drove gentle. Next day she was driven by the owner, and proved broken of the habit.

Case No. 2.

When at West Falls, near Buffalo, a gentleman told me he had a fine six-year-old colt that he raised and broke; that he was naturally very gentle, and trotted fast, but one day while letting him out on a rapid trot, a man drove up behind with a pair of fast-stepping horses, which so excited the colt that he pulled against the bit and ran away in spite of all he could do. The next day he hitched him up and let him move off, but the moment he struck a trot, he ran against the bit and pulled so hard that, despite all effort to prevent it, he again ran away. He now procured a pair of Hartman reins, supposing he could hold him with these without difficulty; but, as before, the moment the horse struck a trot he ran away. He next tried different kinds of bits and rigging without success, and had given up all hope of ever being able to control him in harness. He

had now been standing six months in the stall, doing nothing.

Understanding the disposition of the horse, I felt confident there would be no difficulty in breaking him, and told the owner if he would join my class I would put him in the way of breaking the colt. He laughed, saying that he would believe it when he saw it done. But by much urging he was finally induced to join the class.

Having too many horses to experiment upon that day, to save time I subjected this horse only to the simple training of the mouth for some twelve minutes. At first there was so little sensibility that pulling upon the bit seemed like pulling upon a post; but by repeating the treatment he was soon made to feel its power sufficiently to yield to its restraint. The owner wished the horse hitched up and driven out of doors, but I knew this could not be safely done. I told him if he would bring the horse on the next day to a neighboring town, I would drive him. He did so, and upon testing him there, I found the mouth now so sensitive that when pulled upon sharply he ran back across the barn. I immediately hitched him to a buggy, with breeching straps unbuckled, and drove him on a sharp trot and run, proving him perfectly manageable. He was driven next day by his owner to Wales Centre, and proved entirely broken.

The more difficult cases of this character are well represented by "Cases 2, 3, 5, and 7, Kicking;" "Cases 1, 3, 6, and 8, Fear;" and "No. 2, Subjection."

Half-moon Bit.

The Half-moon Bit, an illustration of which is given, will sometimes work very nicely upon head-strong pullers. The point of its success lies in holding the head up, which can be easily done by the form of checking in connection

with the extra bit, which of itself greatly restrains the impulse of resistance. The bit is very simple, merely a circular mouth-piece, with the inner part filed down to about the thickness of the back of an ordinary knife-blade, and rounding to prevent cutting. This makes the bearing surface against the mouth so narrow that the most plucky horse can scarcely pull against it, while its circular form prevents pulling sideways. It must, however, be tried cau-

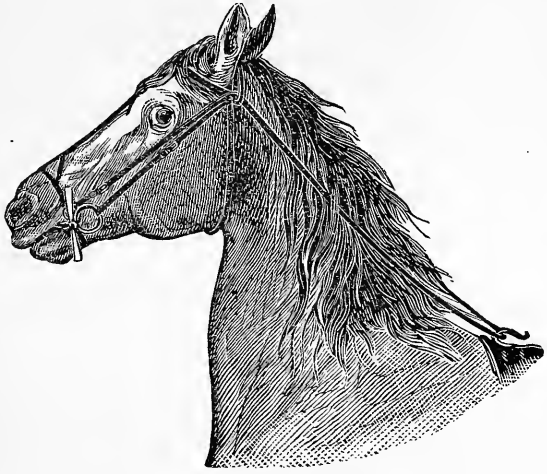


FIG. 196.—The Half-moon Bit adjusted.

tiously upon a dangerous horse. Before trying whether the horse will submit to it, put on one or two foot-straps, which will be sufficient to disable the horse should he lunge so recklessly against the bit that he cannot be held. (This will be necessary only in extremely bad cases.) Then in all cases the experiment should be made where the road is very wide and free from obstructions, or in an open, smooth field. For illustration of bit, see cut 73, page 75.

SPOON BIT.

The Spoon Bit, an illustration of which is given, is so constructed as to bring the edges of two flanges, when

pulled upon, upon each side of the lower jaw. In some cases of badly trained mouths, or of moderately head-strong horses, it will be found to work very nicely. One point of advantage is its mildness, it being only a simple snaffle bit until resisted. It works especially well in the management of horses that rein hard. It is not a bit that is

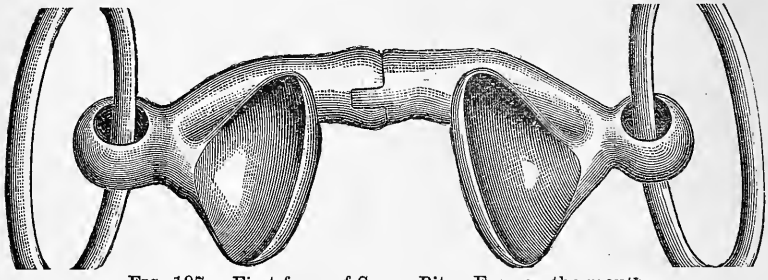


Fig. 197.—First form of Spoon Bit. Easy on the mouth.

adapted for head-strong, dangerous luggers, as it does not give power sufficient for such cases.

A valuable form of bit, and one which works exceedingly well for the control of some headstrong, pulling horses,

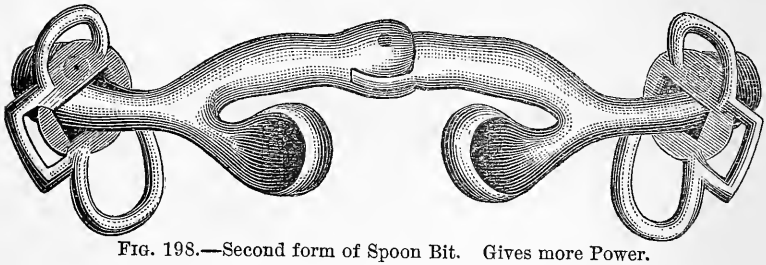


Fig. 198.—Second form of Spoon Bit. Gives more Power.

is a simple bar made flat or concave on one side, and rounded on the other, from five-eighths to three-fourths of an inch wide, with a piece of rounded leather inside the ring on each end, as shown in cuts 199, 200. The flat or concave side is used when the horse pulls, or is inclined to resist the bit. When the mouth is sensitive and manageable, simply turning the rounded side against the jaw makes

it extremely easy on the mouth. The length must be regulated to the size of mouth, or about the average length of driving-bits.

Four-ring Bit.

The Four-ring Bit is peculiar in respect to the sensibility it causes upon the roof of the mouth. While it is not a bit that gives much direct power, the effect is such that

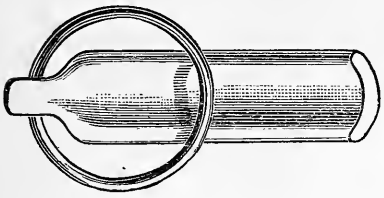
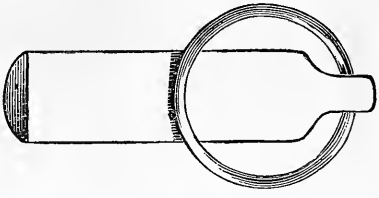


Fig. 199.— Slightly rounded, or flat when not desired to be severe.



Concave, with edges rounded, when more severity is required.

but few horses outside of lunging, runaway horses, can effectually pull against it. Hence a horse that with an ordinary bit would pull so hard as to make it extremely dif-

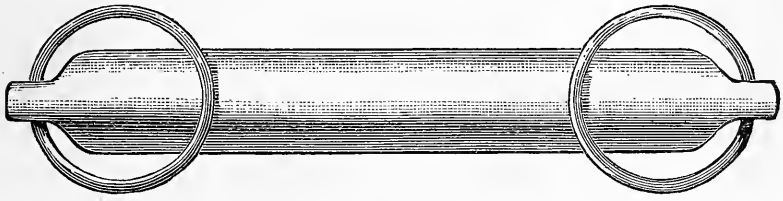


Fig. 200.— The rounded side of the bar.

ficult to restrain and control him, more especially one that as he warms up will pull harder, will scarcely pull at all upon this bit, but will drive so easily as to hardly straighten the reins.

It is not, however, to be risked too much in the driving of a really dangerous horse; for, as before stated, its success depends more upon the sensibility it causes upon the roof of the mouth than upon any real power it otherwise

gives. Consequently, should the horse lunge recklessly against the bit, the pain it inflicts not being sufficient to hold him in check, he is liable to get away. When used upon a doubtful horse, he should be carefully tested with it, first by driving around a little in harness, then as described in the use of the Half-moon Bit. The foot strap should also be used to enable testing the horse sufficiently hard to know with certainty to what degree the horse will submit to the restraint. It is no proof of skill, but, on the contrary, of ignorant fool-hardiness, to take doubtful chances in the management of cases in which a single mismove would precipitate a dangerous runaway.

It is a perfect remedy for cases that pull on one rein, and for luggers. It should be carefully fitted. The strap across the nose should not be so long as to lose the power of forcing the joint firmly against the roof of the mouth.

Patent Bridle.

To give sufficient power to overcome extreme resistance most effectually, I devised the Patent Bridle, which gives such power that the strongest horse can be easily held and controlled. It does not require any practice or work other than fitting the head-piece and bridle to the head, and setting the horse back a few times. It gives two important points of advantage: 1st. It is as any common bit in the mouth until resistance is excited, when by an ordinary pull such pain and power are produced in the mouth that it can rarely be resisted; 2nd. Should there be so much pluck as to pull against it, in addition to the pain and purchase upon the mouth, it also causes such pressure upon the spinal cord,—the most vital part of the whole body,—that the whole nervous system is relaxed, and the horse is subdued, driving with a slack rein; yet it is ready at any time to repeat the same terrible penalty.

This bridle and the bits will be furnished by the author or his agents.

Lugging, or Pulling upon One Rein.

The habit of lugging or pulling on one rein is the result of the faulty method of training the mouth. If not made to submit to flexible restraint, when pulled upon the result is lugging, pulling on one rein, etc. It may result from one side of the mouth being sore, but is not so often from this cause as supposed.

The quickest and simplest way to break up this habit is to put on the Breaking Bit, also the First Form of the War Bridle. But instead of bringing the cord through the mouth, bring it through the rings of the bit. Pull sharply on the side opposite that on which he lugs, until he will bring the head around freely without being pulled upon. Now tie up the cord, take down the reins, and drive around. If he pulls in the least, repeat the lesson, until he learns to yield promptly to the restraint of the reins, when he ought to drive to an ordinary bit; or the Breaking Bit can be kept on for a day or two. This treatment will make that side of the mouth as tender and submissive to restraint as the opposite, and he will pull evenly.

I have found a great many bits advertised as a perfect remedy for side-reiners, etc., but in my experience they have not proved satisfactory. Sometimes a bit will work on some horses, but not on others. The Four-ring Bit, as explained under that head, is practically a specific for this habit; but as it is advisable in many cases to so break up the habit that an ordinary bit can be used, I have thought it advisable to include details for doing it.

Will not Back.

Sometimes a horse will back readily out of harness, but when put before a wagon will resist every effort to make him back. Again, a horse may back all right until crowded and maddened, when he will stand sullenly, and refuse to move. Various palliative measures could be mentioned for making such a horse back, though they are hardly practicable; as, standing in front and pushing the end of a sharp stick under the shoulder blade gently until he will go back; or, by taking a firm hold of the reins, and kicking the shins until the leg is lifted, then pushing back and repeating until successful.

If a young, sullen colt is liable to resist the restraint upon the mouth so much as to injure it, put around the body a surcingle. Tie a rope around the fore foot below the fetlock, and bring forward over the belly-band. Now, while standing in front of the horse, catch hold of the reins and pull up the foot; as you let the foot down again, pull upon the reins; this will bring the foot down eight or ten inches back of the other one. Caress for this, and repeat, which will very soon teach a sullen colt to go back freely.

The War Bridle, Second Form, will usually work better than this means, but it is liable, in extreme cases, to bruise the mouth somewhat. If, however, it is desired to use it, stand on the near side, bring the head partly around, then give a sharp pull backward; this will force the horse partly sideways, as well as back. Forcing him sideways a little prevents his power, in a great measure, to brace against the pull, as he could do if pulled upon in a line with the body. Simply repeat cautiously until he can be made to go back freely.

If a horse that has learned to resist, put on the harness

with the Breaking Bit, or Half-moon Bit, and with a firm hold of the reins get directly behind and call, "Back!" sharply. Follow this with a quick, sharp, raking pull, so that, if possible, the horse can be forced back before warming up, as he will in this condition struggle hard to resist. If he spreads his legs, and throws his head sullenly against the bit or down upon the breast, the case is a bad one, and it is necessary to work carefully. Simply repeat slowly, and if there is not success before he warms up and becomes reckless, put him away until cool, when the mouth will be found so tender that he will rarely refuse to go back freely when pulled upon.

Great care should be used not to force the horse back too freely after he once gives up; for with the increased tenderness of the mouth produced by the severe treatment, he may acquire the habit of going back too freely when pulled upon,—one of the most annoying habits a horse can learn. I would call attention to this particularly in training colts to back.

Usually a lesson of ten or fifteen minutes is sufficient for ordinary cases, but I have in a few instances found old horses that had learned this habit so thoroughly that it was utterly impossible to break them of it. One of the worst I ever found was in a small town in Connecticut. This was a medium-sized, gray horse, twelve years old. He could not be made to back, in or out of harness. The Breaking Bit was used, and he was compelled at first to go back repeatedly by making the jerks so quick and sharp as to force him to yield before he could concentrate his purpose to resist. But becoming warmed up, the legs were thrown forward at an acute angle with such an obstinacy of resistance as to defy the utmost force of punishment by the bit. As a matter of experiment, five men pulled steadily upon each rein; but the horse resisted with so much

stubbornness as to be pulled down upon the belly. Seeing the necessity of now resting until the mouth could become sensitive, and the excitement pass off, I directed the owner to bring the horse to the next town, promising to then make the experiment a success. Upon trial at this place, a few quick, energetic pulls proved sufficient to make the case yield, and he soon could be made to back as readily as desired.

Will not Stand.

Usually it is not difficult to teach a horse to stand unless there is inclination to balk. If a young horse that is simply a little impulsive, treat the same as directed for teaching colts to stand. Usually, with an ordinary mild bit, there will be an inclination to pull against it and fight its restraint. If this is the case, the Breaking Bit can be used as follows :—

First, with the harness on, train to stop as explained in Colt Training. When first hitched to a wagon, let it be away from the place where accustomed to be hitched. I prefer to turn the horse's head toward a high fence or barn, because there is less inclination to go ahead when such an obstruction is in view. Then get in and out repeatedly, occasionally giving him an apple, etc., for some time. Now move him around, standing him a little farther off at each repetition, and gradually more sideways, until he will stand with his body parallel to the barn or away from it. Next, repeat the lesson where in the habit of being hitched, until he will stand as desired.

When hitched in, have the reins in the hand or within easy reach. The moment he starts, give a sharp pull that will make him stand, go to the head and stroke it for a while, then go back to the wheel. For the least resistance, set him back sharply with the reins. When desired to

start, take him by the head, and, after going a few steps, call, "Whoa!" If he does not stop promptly, pull sharply upon the reins until he will do so. Reward for standing; punish for moving. Having once learned to stand and wait, get on the step and make a noise; this submitted to, get in quietly and sit down. Repeat the stopping, starting, and waiting, until the impression is fixed upon the mind. After he will do this properly away from the house, he should be taken where in the habit of resisting, and the lesson repeated, if necessary.

Horses of this character are sometimes very sensitive, and require nice management, because they are so easily taught to balk. The point is to impress thoroughly the idea of stopping, and make it so habitual that, when the horse is most impulsive during cold and chilly weather, it will not be forgotten. A very good plan, should the case be a little doubtful, and seem in danger of working into the habit again, would be to have some one stand in front of him, or near the head, and stroke the nose a little, but not touch the reins. This will disconcert the horse sufficiently to make him stand while getting in, when by stepping out of his way he will move off quietly.

If the Breaking Bit is not available, the following course of treatment, though requiring more time and care, will be found to work very well: Put on the foot strap, call "Whoa!" at the same time pull upon the foot strap, which will pull the foot up and throw the horse upon three legs. After a few repetitions, he will stop rather than be pulled upon and tripped. Now put him before a wagon, carrying the foot strap back as a third rein. If he starts, simply pull the foot from under a few times, or until he will stand as desired. In some cases, the foot strap may be put on both fore feet, as a very determined horse may lunge forward upon three feet. If when one foot is taken

up there is inclination to lunge forward, simply pull the other foot from under, which brings him forward upon his knees. This treatment should be given on soft, sodded ground, or sandy road free from stones, to avoid bruising the knees.

Put the Breaking Bit into the bridle and commence cracking a whip, yelling, or anything else to attact his attention. If he moves, punish by jerking him back sharply, and say, "Whoa!" Then repeat, cracking the whip, etc., until he will stand quietly under the excitement. When he will stand while in wagon, get out and caress him, walk around carelessly, crack the whip, etc. The instant he starts, call "Whoa!" and jerk him back again. When he will stand, go to his head, caress, give an apple, etc.; so repeat the lesson until he will stand quietly. At first, the cause of excitement should be moderate, gradually increasing each time. The reins should extend back into the wagon over the seat, so they can be caught quickly when necessary. In this way the horse is made afraid to start for fear of being punished. If it is desired to make the effect still more thorough, boys can be made to run around, make a noise, etc.

A simple way to make a horse stand without being hitched, is to buckle or tie a strap or cord around the near fore foot below the fetlock, and tie the other end around the shaft back of the cross-piece, bringing it short enough so that, while not interfering with the limb while standing, it prevents its being brought forward in the effort to stop or go ahead. A horse will stand quietly by spanceling the fore legs together; that is, tying two small cords around the fore legs about six or seven inches apart. As soon as the horse finds he cannot step, he will stand quietly.

CHAPTER VIII.

HALTER-PULLING.

HALTER-PULLING is one of the simple habits that not only cause great annoyance, but seriously injure the value of a horse, by rendering him unsafe to be left hitched in the street. A horse subject to this habit may stand all right when not excited, but will be ready to break his neck in the attempt to pull loose should a bit of paper, or anything

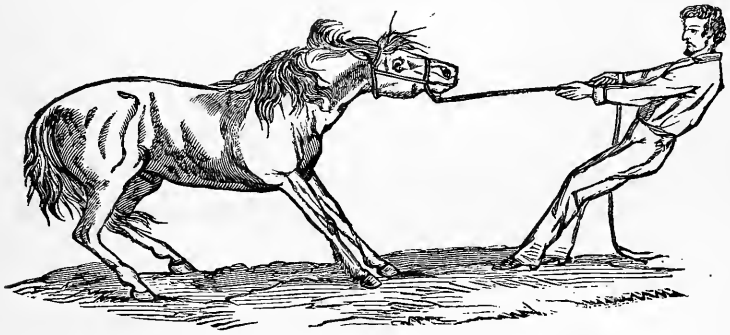


FIG. 201.—As the colt will naturally resist when pulled upon straight ahead.

else, be suddenly thrown down in front of him. There was no habit that troubled me more to learn how to manage than this one. It was easy enough, with a little care, to keep a horse from pulling for a short time, but the difficulty was, in bad cases, to wholly prevent or break up the habit.

When there is an effort at first to lead a colt by the halter, the moment the pressure is felt upon the head, there

is an inclination to resist, or pull back. If the halter is a rough, hard, rope one, with the slipping-noose back of the jaw, when pulled upon the pain inflicted will increase this tendency to resist and pull away. (See cut 201.) In the same manner when a colt is tied, and his freedom restrained, there is a natural inclination to resist and pull back; and if after a violent struggle the halter is broken, the habit of pulling is learned. Usually, the younger the colt the more

FIG. 202.—As the colt is liable to break loose when hitched in the usual manner.

stubborn will be the inclination to pull, and often he will struggle so desperately as to throw himself down. Not only this, but there is danger of straining and injuring the neck by the violence of the jerking and pulling. I have known of colts pulling so hard as to make the neck stiff, deforming and spoiling them; and in a few cases even killing themselves by dislocating the neck. Yet there was practically no better remedy in use than to hitch by a halter so strong that he could not break it. The point was to be able to so hitch the colt as to induce the least inclina-

tion to pull, and that when he did pull he could not break away, strain, or otherwise injure himself.

The first successful experiment I made in the management of this habit was to pass the hitching part of the halter through the ring in the manger, thence back over the belly-band, and tie to the hind foot, leaving it so long that the horse could step around as usual. When the horse pulled, the strain came directly upon the hind leg, which prevented his pulling severely. After submitting to this, I next tied the hitching part around the fore leg above the knee, so that should he pull, the leg was pulled forward to the manger. But I soon discovered two objections to this method: First, there was danger, by this violent pulling upon the leg, of causing serious lameness; and second, when afterward hitched directly by the head, there was a liability of his repeating the pulling.

To avoid this difficulty I took a cord of sufficient length, brought the center under the tail like a crupper, bringing both ends forward over the back, twisting a few times, and then knotted them together in front of the breast. I then passed the ends through the rings of the halter, and tied to the post or manger. When the horse pulled, the strain came directly upon the tail, which, in the case of a colt, would cause him to jump ahead, surprised and frightened. I soon learned, however, that a stubborn horse accustomed to the habit, would quickly learn to pull against it, or pull as bad as ever when it was taken off. I also found that it was apt to make the tail so sore that there was not only liability to cause the horse to kick then when pulled upon, but afterward, should the rein be caught under the tail, or he be otherwise irritated.

I then devised the plan of making a noose of the cord, and placing it well back around the body, bringing both cords forward between the legs, and through the hole in

the manger, thence back to the halter, and fasten. Thus two important improvements were made; namely, the serious objection of making the tail sore was removed; and, instead of tying directly to the post or manger, passing it through the ring or hole in the manger, and tying to the halter back of the jaw, the restraint was brought directly upon the head as if ordinarily hitched, but with the advantage of greatly disabling and punishing, while the horse could not strain or injure himself in the least, no matter how hard he pulled.

If the subject were a colt, the moment there was an effort to pull, the sudden tightening of the cord around the body frightened and hurt him so much that it compelled an instantaneous jumping ahead, and after repeating two or three times, all inclination to pull was entirely overcome. It was necessary to hitch him in this way only a few times, when he could be tied by the halter directly, without knowing it was possible to pull. If while hitched in this manner he was frightened by a robe, or a piece of paper coming suddenly in front of him, he was soon convinced of his inability to pull loose, and consequently the inclination to do so was overcome.

For especially bad, sullen pullers, however, I found this was not of itself sufficient to break up the habit. It was easy, of course, to prevent the horse from pulling while the rig was on, but when taken off, and the horse tied as usual by the halter, there was liability of his again repeating the pulling. To overcome this difficulty, I was led to the expedient, when there was an effort to pull, of inflicting such intense pain as to disconcert the horse from his purpose, even while under the greatest excitement, and on this point I was successful. To give something of an idea how I was led to do this, I will refer to a chance incident:—

Two colts that pulled very hard upon the halter—one

of them desperately—were brought me to experiment upon. The one that pulled the worst provoked me so much by his intense pulling, that to frighten him out of it I whipped him very hard upon the tip of his nose, where there is the most sensibility. Though he made a supreme struggle, I succeeded in this way in making him so afraid to pull that, no matter how excited afterward, he could not be made to go back. The other horse submitted in a few minutes, requiring but a slight punishment. Meeting the owner afterward, he informed me that the horse that pulled the hard-

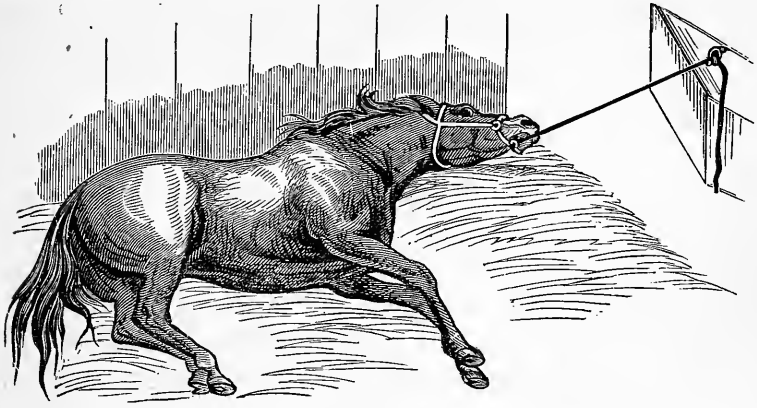


FIG. 203.—As a horse of sullen temper is liable to throw himself down when pulling.

est at first never did it afterward, while he had much trouble in effectually breaking the other one of the habit.

This led me to experiment upon this principle all I could. When I found a bad case, I treated it, if possible, in private, and was invariably so successful that I soon became convinced that I could in this way force the most stubborn pullers into submission in a few minutes. In making these experiments for over two years, I found that in many cases the lesson must be repeated, in order to fully break up the habit, and that it was fatal to success to let the horse feel that he could resist at any point. Nothing

with which the horse is tied should give way. Even the breaking of the whip, or the inability to force to the point of complete submission, would be equivalent to defeat. In all cases, the experiment should be made at the place where in the habit of resisting, or as near it as possible.

The Patent Bridle will be found to give still more power, and is indispensable in the breaking of bridle-pullers. In using this, reverse the reins through the pulley, so that instead of passing back, they will run forward. (See cut 205.) Now the moment the horse pulls, the punishment upon the head becomes so severe that he will be afraid to repeat it.

Having learned these points, I advertised, among other apparently difficult feats, to break any halter-puller in two minutes so that he would not pull upon his own halter when hitched. Many amusing incidents could be given, showing an effort to break me down in this respect. I will give here two illustrative cases, one of them among the worst halter-pullers the writer ever saw:—

On the morning of my engagement at a large town in Northern New York, happening to step into a livery stable, I found several men standing around, laughing and yelling at a mare hitched in the stall. She had a rope under her tail, against which she pulled with great desperation, sitting back upon the ground and bracing herself with her fore legs. There was no lunging, but a steady, reckless pull, which settled the cord its thickness into the flesh of her tail. In explanation, they said they were stirring up and practicing the mare, to have a good subject for me; that they knew she was the premium halter-puller of that country, and they proposed to fix her so that she would beat me.

She was ten years old, of medium size, brownish black in color, of the most courageous, plucky character imagina-

ble, and one of the worst possible halter-pullers in the country. She would undoubtedly have defeated me had I not, in this way, become aware of her extremely bad character, and prepared for the emergency. It was a preconcerted plan to spring the mare upon me, and defeat me, and thus make an excuse to get their money back. Though I had never seen so bad a halter-puller before, I determined to put a bold front on the matter, and pass for all I was worth.

In forming a class, I told the people they were to distinctly understand if I could not control the mare in two

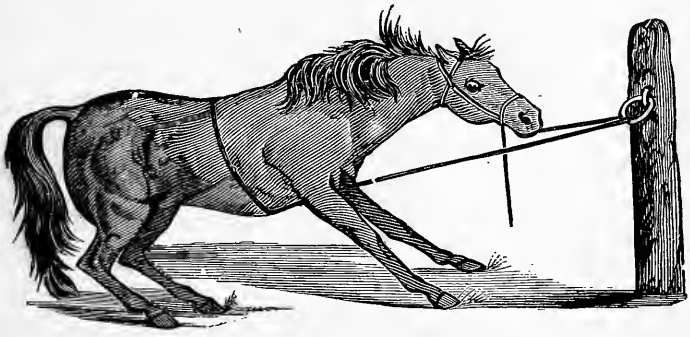


Fig. 204.—The halter-puller trying to pull loose.

minutes so that she could not be made to pull when hitched by her own halter, I would give every man his money back; with this understanding I made a large class.

It now became important for them to defeat me, and for me, if possible, to succeed. Fearing my whip would break, I secured an extra one, of the best quality I could find, stripped off my coat and vest, attended carefully to every detail of hitching, and doubled the usual strength of the cord, to guard against the possibility of breaking. The moment the mare was tied, she went back with all the fury of a maniac. But she had no more than done so when I sent the lash of the whip across the tip of her nose, re-

peating as rapidly and with as much force as I could. The struggle was a desperate one, and the excitement and anxiety to see which would beat was intense. At the fourteenth or fifteenth blow, the whip broke; dropping it and catching the other, without losing a blow, I followed up the struggle. Had this whip broken, failure would have been inevitable; but fortunately it held out, and at about the thirtieth blow she jumped ahead. But true to the instincts of her desperate pluck, she immediately went back again. The punishment, however, was too hot for her, and

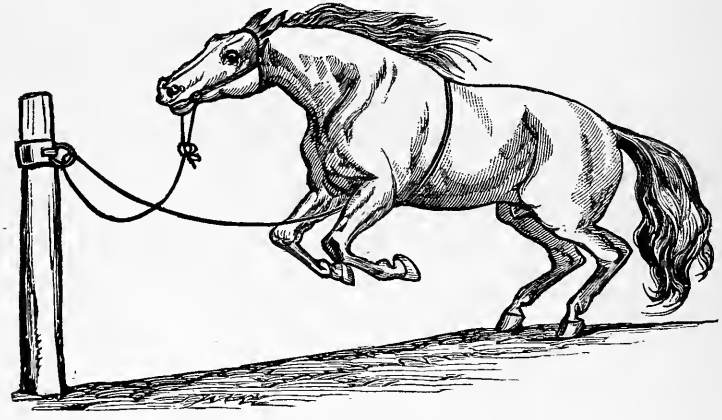


Fig. 205.—As a horse will rear and jump ahead after pulling.

after the third stroke she bounded into the air, completely conquered; for, in defiance of the utmost effort, she could not be made to pull back. I was consequently voted "all right." So great was the exertion on my part, that after she submitted I was out of breath and completely exhausted.

I told the owner afterward that if he wished to break the mare successfully, he must not permit any fooling with her; he must lead her quietly to the stable, back her into the stall, tie her head to the post, and let her stand until cool and over the excitement, when the impression would be so

intensified that she would not repeat the habit; and as a matter of precaution to test her as thoroughly as he could, then hitch her as I had done. I met the owner a week afterward, when he told me there were not men enough in town to make her pull hard enough now to break a tow string.

At Marion, N. Y., where I made a large class many years before, I found a twenty-four-year-old mare that had not been hitched for ten years; also a daughter and granddaughter of the mare,—all confirmed halter-pullers. To catch me, nothing was said about the character of the subjects until the time of making the experiments. The youngest mare was led in first, and proved a decidedly good subject, yielding unconditionally in about a minute. They next led in the mother, a twelve-year-old mare, saying, "We have another case we wish tried." But, upon trial, she yielded, if anything, more readily than the first. They laughed and said, "Now let us have the old mare; if he can stop her from pulling, we will give it up." This revealed the plot, and she was the reserved case upon which they depended to defeat me. Upon trial, however, the old mare proved no more difficult than the others,—in fact, not making near so good a contest as the first. Almost daily there were horses of this character brought me, many of them extremely bad; but in no case was there failure. (Details of hitching a colt, and accustoming to stand hitched, are fully given in "Colt Training," and can be referred to under that head.)

In breaking up this habit, no possible chances for defeat should be taken. First, the cord must be so light and pliable as not to be noticeably felt around the body, yet so strong that it cannot be broken by the most desperate lunging. If heavy and clumsy, it would teach to descriminate between being off or on. Secondly, the manger, post,

or ring through which the cord plays, should be so strong or solid there is no danger of giving way. If it is a hitching ring, and small or rough, it should be wound with leather, or something to prevent its cutting the cord. Thirdly, the horse should be first tied where in the habit of pulling hardest, or where most accustomed to pull. The degree of freedom should be about the same as when ordinarily hitched by the halter, and the point of tying or playing through the ring should be about on a level with the breast. As before explained, in ordinary cases all that is necessary is to hitch in this way, and frighten him back a little at

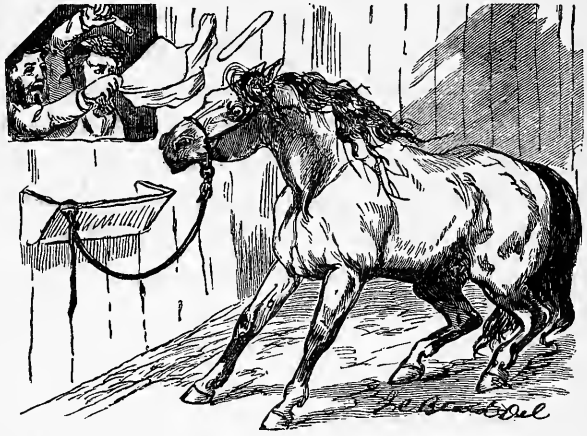


FIG. 206.—A test to which the halter-puller was usually submitted by the class after treatment.

first by whatever excites him, until he refuses to go back, when all inclination to pull is overcome. While in serious cases, especially if of a plucky, determined character, punishing sharply with a whip will be necessary.

It is important also that the whip be of the most suitable kind, as in many cases the want of this precaution would be sufficient to cause defeat. It should be from five to six feet long, rather stiff, with a bow top made of buckskin, and a good hard lash. It must be of such good material that there will be no danger of its breaking, and so easily

handled that the end of the nose can be struck with quickness and precision. If long and unwieldy, it cannot be handled with the effectiveness necessary, as there is danger of hitting around the eyes and head, which must not be done.

Another point: The horse must not at first be hitched where he cannot, if necessary, be punished with the whip. When he goes back, punish instantly. When he jumps forward, make a noise, crack the whip, or anything else, but do not strike him. It is advisable to let him stand quietly where treated until cool. He may, when left alone, try to pull again once or twice, but this will only fix the impression the stronger until he will give up the contest. Next, he should be tested at other points, though not very severely. If he pulls, the punishment should be quick and sharp until submissive. It does no good to break a horse only sufficiently to make him stand quietly when not excited or frightened. To be effective, he must be made to stand quietly, regardless of any of the usual causes of excitement. Unless this can be done, the horse cannot be risked hitched in the street, or at any place where exposed to any causes of fear. Hitching to a limb of a tree, which will give when pulled upon, will prevent the habit during the time hitched, but when tied to an unyielding post or manger he is again liable to pull.

Running Back in the Stall when Unhitched.

For ordinary cases of running back in the stall when unhitched, tie a little longer than for halter-pulling; then untie the halter, and the horse will run back to the point of being disabled and hurt. This will cause him to jump ahead. Repeat, at each time tying a little longer, until the nose will come on a line with the back end of the stall, when he should be hit sharply across the nose until he

jumps ahead. This will in a short time make him afraid to run back. As a precaution, it is advisable, the next time he is unhitched, to have a cord on, so that should he try to run back he could be caught by the cord attachment and punished as before.

Whenever I had a particularly bad case of this kind, I would hitch the horse as before explained, but with the cord or rope so long that when he went back it let the nose come just outside the stall. I would then stand outside, while some one unhitched him, or made him go back. The moment he went the length of the cord, he was stopped with a jerk, when I stood ready to punish him by hitting him across the tip of the nose once or twice, causing him to jump ahead. A few repetitions of this would make him so afraid he could not be made to go back. I have at different times created considerable amusement in the management of these cases by making it impossible for the owner, after the experiment, to back the horse out of the stall. Treated in this way, the management of these cases is easy and simple.

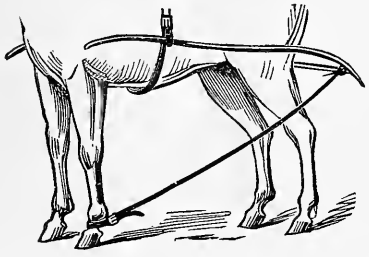


FIG. 207.—First method of making a horse stand in harness without hitching.

FIG. 208.—Second method of making a horse stand without being hitched.

It is sometimes quite important to have a horse stand without being hitched, as there may be no hitching-post at

hand. This can be done in two ways: First, by buckling one end of a strap around the foot below the fetlock, and the other end to the crosspiece of the shafts, just short enough to hold the foot in a perpendicular position. When the horse tries to step, being unable to carry the foot forward he is rendered helpless. It is always advisable to try a horse before leaving him in this way, as it is barely possible he may lunge forward upon three legs if badly frightened; but only wild, impulsive fellows are liable to do this. Another way is to simply tie the fore legs together, as seen in the cut. This method is specially valuable in making saddle-horses stand without hitched.

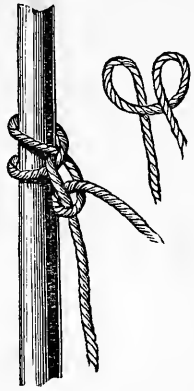


FIG. 209.—How to hitch a horse to a tree or smooth post so that the strap or cord will not untie or slip down.

It is also important to be able to hitch a horse to a tree or smooth post in such a manner as to prevent the cord from slipping down. Above I give an illustration of a method for doing this, which is so plain that it does not need any further description.

CHAPTER IX.

STALLIONS.

THERE is no class of horses that require more careful management than stallions. They have more intelligence than other horses, and are quicker to take advantage when carelessness or weakness is shown. They are also more courageous in their resistance. In addition, the character of their resistance—biting and striking—is far more difficult to combat. Mistakes can be made in breaking mares and geldings without doing much more harm than to increase the labor of their subjection; but in subduing a stallion, a mistake, or even slight carelessness, is in many cases fatal to success. The whip should never be used upon a horse of this character; for there is great danger, if at all spirited or courageous, of his becoming aggressive and vicious.

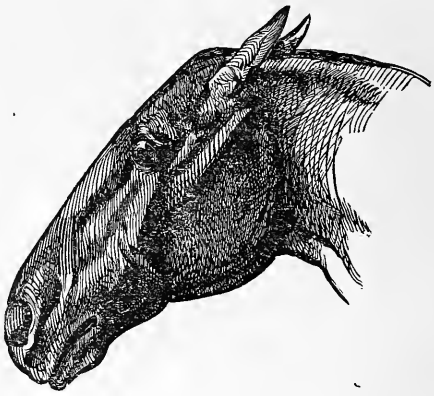


FIG. 210.—Portrait from life of Old Hambletonian. Sire of the Hambletonian trotters.

A young horse that is very gentle, allowing himself to be handled and caressed around the head, etc., can, by bad treatment, easily be made so vicious that his whole char-

FIG. 211.—As vicious, headstrong stallions usually resisted before treatment.

acter is changed. A great many cases of this kind have come under my observation. At one time, a gentleman who had previously attended one of my lectures, told me that he and his brother owned a fine stallion in company. The horse was naturally quite gentle, but one day his brother, becoming impatient with him, hit him sharply; the result was the horse ever afterward held such an antipathy against him that he could not safely go near or handle him in any way, while towards himself the horse was perfectly gentle.

One of my pair of matched, trained horses, nine years old, bought in Madison, O., and exhibited by me for a number of years, was of good character at the time of coming into my possession; but when I undertook to train him to be controlled by the whip, he became so excited when hit that he jumped at me with all the ferocity of a bulldog, and I was obliged to tie him back. One sharp whipping, and leaving him mad, would have made him irretrievably vicious; so I was very careful when compelled to rouse him much to treat him afterward with great kindness,—giving him apples, rubbing his nose, etc., until entirely over the excitement, and finally succeeded in training him as I wished without making him vicious. After using him for some years, he passed into other hands, when, by needless excitement and punishment, he became so bad a biter as to be almost worthless.

The "Gifford-Morgan Horse," sold to Fred Arnd, of Bath, N. Y., and mentioned in the last part of this chapter, is a striking case in point. Had I not been in Bath at the time, and able to treat him properly, he would have been entirely unmanageable and worthless.

I would also refer to the "Robert's Horse," of Utica,

N. Y. ("Case No. 13, Subjection.") This horse had previously been of so good a character that he was used for family driving; but in consequence of being whipped repeatedly by an ignorant groom in order to make him show off, he became so vicious as to be entirely unmanageable. There are, however, occasionally to be found stallions that are by nature vicious, even in defiance of the most careful management. Perhaps the most marked case of this character ever known in this country was the Hillman Horse, "Jet," Case 7, Subjection.

During the conversation I held with Mr. Goodenough (referred to in chapter on "Subjection"), in speaking of the intelligence of horses, he said, "It is wonderful what a memory a horse has. Once, while we were subjecting the Stafford Stallion to treatment, his resistance was so determined that Rarey lost his patience, and hit him across the head with a pitch-fork. The horse never forgot it; for he ever afterward manifested such hatred towards him that he could approach and handle him only by using the greatest caution, while I could handle him without exciting in him the least resentment. Some time afterward, when handling him, happening to leave the enclosure for a moment, the horse suddenly grabbed Rarey by the arm, and would undoubtedly have killed or seriously injured him had I not quickly rushed to the rescue. On my approach, the horse let go and ran off."

I refer to these cases to show to owners the necessity of employing good, careful men to take charge of their horses. A coarse-grained, passionate man should not be employed at any price. Habits of intemperance should in all cases be sufficient to disqualify a man for such work.

My experience in the management of this class of horses

has been very extensive. Advertising as a specialty that I would make any headstrong, unmanageable stallion that could not be led or controlled by even two or three men at once, so manageable in ten minutes that I could stand ten feet away and call him to me away from a mare or other horses, of course there was great interest to see whether I could do so apparently difficult a feat; and almost every week or two an especially vicious stallion of this character would be reported for treatment, but he invariably proved a good subject.

There is no class of horses that submit more readily to treatment when taken in time, but they are the hardest to reform when the treatment is not right, or when, by the inefficiency of the owner or groom, they are afterward allowed successful resistance. On this account I have thought it advisable to give special instructions for the management of these cases.

Treatment for Headstrong Stallions.

If a colt is simply unbroken and impulsive—perhaps nipping a little—he can be easily made gentle by subjecting him lightly to the Second Method and following with the War Bridle. Sometimes a horse of this character is perfectly manageable until led near other horses, when he will try to pull away. I will refer to two or three such cases. While at Pennington, N. J., a horse that pulled away so badly he could not be taken into the streets at all if other horses were in sight, was reported for treatment. He was subjected lightly to the Second Method, and then brought under thorough control by the War Bridle, when he was led home as manageable as any horse.

At a point in Northern New York, a five-year-old horse

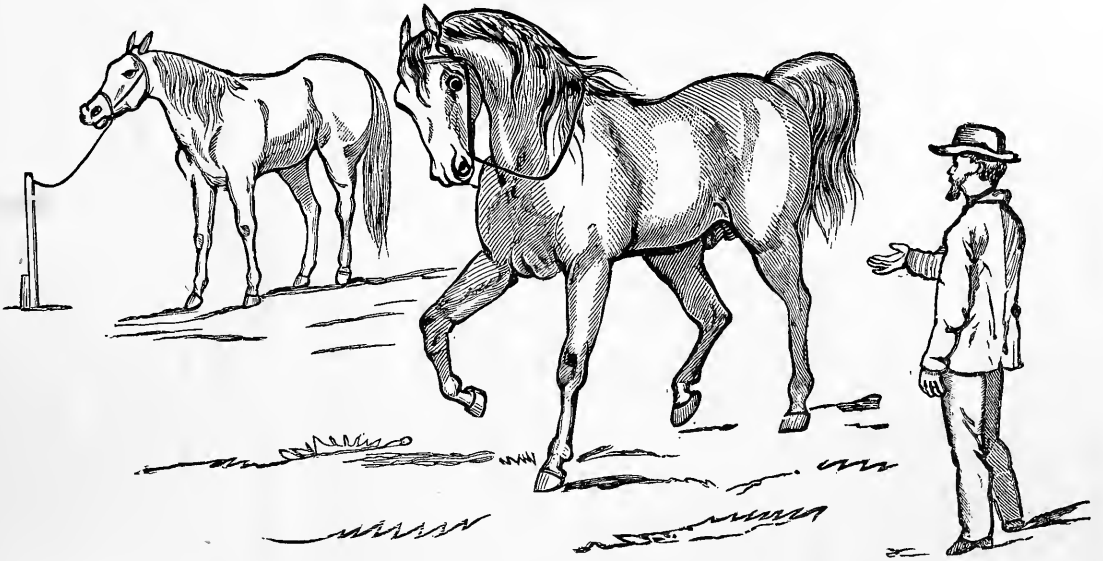


Fig. 212.—As the headstrong, vicious Stallion, after treatment, could be called away from a mare or horse. Tests of control given by the writer before the class upon horses of this character.

was produced that proved entirely unmanageable in this respect. As a test, a horse was brought to his view at the opposite end of the barn, when, in spite of the united efforts of two or three men, he rushed toward him, and to guard against accident, the horse was taken away. In less than five minutes' treatment by the War Bridle he was made perfectly gentle while in the presence of other horses—even to being called away from them by word of command alone, while I was standing from six to ten feet away from him.

At Litchfield Corners, Me., a horse of the same age was reported to be utterly unmanageable when brought near other horses; but by the same treatment he was brought under control in less time than the above case. At another place near Portland, Me., a four-year-old colt that had become entirely unmanageable in the same way, and was brought to the place of experiment only by blindfolding, was made completely manageable in seven or eight minutes, and led home by the owner without the least difficulty.

Well-bred, nervous-tempered horses of this character will always prove easy subjects to manage; while those of a sullen, cold-blooded, or draft order, may be found quite difficult, and require very careful treatment. It is seen that for these simple cases a short lesson with the most severe form of the War Bridle should be all that is necessary. Stand opposite the shoulder, four or five feet away, and give a sharp pull, repeating slowly until he will come around promptly. This lesson must be made sufficiently thorough to overcome all inclination to resist, no matter how tried or excited. Five or ten minutes' treatment, when properly done, should be sufficient to break up the habit.

Treatment for Very Vicious Stallions.

Vicious stallions require very careful management. In determining the treatment, a great deal depends upon the temperament of the horse, and how greatly his resentment has been excited. A horse that seems the worst is not always the hardest to break; in fact, if he has never been fooled with much, he may be, in many instances, the very easiest to manage; and when once subdued by the methods of subjection given here, it will not be difficult to hold the character good by careful after-treatment.

If a stallion of moderately good disposition be partially broken or subdued, and that for a number of times, it may be very difficult to afterward make him reliably gentle. Or when once thoroughly subdued, if he is whipped or managed in such a way as to again excite him to resist, it would require the most thorough course of treatment to produce the same degree of docility as before; for by such successful resistance the horse is taught a degree of cunning and treachery that it is next to impossible to break up. On this account it is of the greatest importance that the treatment of these cases, when once undertaken, should be very careful and thorough.

For a really dangerous horse whose head cannot be reached with safety, the best course is to subject him first to the Second Method, which will give sufficient foundation to use the other methods with more success. Subject him next to the First Method, throwing rapidly as long as he will get up, or until he will not try to resist. It is rarely this will not make the horse, in a general way, submissive; but as it is necessary to make the impression as intense as possible upon these doubtful cases, this treatment should

be followed with the Third Method, and in some cases it may be advisable to repeat again with the Second, after which the War Bridle should be used.

It is almost needless to remark that there should be the most careful attention, while going around the horse, to keep such a restraint upon him as will prevent his biting. A very little carelessness, such as taking the eye off from his, turning the back to him, or relaxing restraint upon the head, would encourage aggression, and practically undo all that has been done. It is easy enough to subject the horse to the various methods of subjection given, but it is not so easy to exercise that prudent after-watchfulness which is an indispensable requisite in fixing and holding the impression made. In going into the stall, the trainer should give the horse an apple or two, or something he likes, to win his better nature. It is also important that the horse be worked or driven enough to keep him a little sore or tired.

Above any other class of horses, stallions seem the best able to determine the strength of character of a man from his actions; and in approaching them in the stall it is almost fatal to success to show any timidity, or weakness in voice or manner; whatever the feeling of doubt, nothing but the most perfect confidence and firmness must be shown. Fencers always look each other in the eye to see an indication of the intended movement, and to be ready to ward off the attack. In the same manner are the intentions and movements of the horse in a great measure revealed. In approaching a vicious horse in a stall, a fixed, determined expression of the eye and manner will sometimes so disconcert him that he will stand undecided what to do until approached and made helpless. The usual course to pursue is about as follows: When within reach of the horse,

look him firmly in the eye, and say, "Get around!" or any other word of command, in a way to make him feel your power. If his eye quails, approach; if not, stand still. It may be a duel of a few minutes to determine which will give up. Should he yield, approach softly, midway between his head and quarters, so as to keep him, as it were,

FIG. 213.—Method of placing the hand, and bringing it quickly to the head, in approaching a vicious stallion.

undecided and unbalanced. If standing too near his quarters, he is liable to kick; if too near his head, to strike or bite. The point is to keep him undecided until the shoulder is reached, then pass the hand quickly up the neck to the ear, thence down, grasping the nose-piece of the halter. He is at such a disadvantage now that unless very violent he cannot do harm. Should he, however, attempt to strike or bite, grab the mane at the shoulder with the other

hand, and so keep the head turned straight from you. But should he prove too much, the only alternative is to get out of the way. Presuming, however, that he is under good control, the point now is to disable him. Have ready a cord, throw the doubled part over the neck and pass over the lower jaw; bring the other part down through the loop tight, and tie into a single hitch. Now put on another cord, and if necessary tie up one leg to prevent kicking, get him out of the stall and subject him to treatment, modifying it according to the case.

Should the horse show a cool, daring expression of eye, with ears thrown back, and standing sullenly, and seemingly indifferent, no chances should be taken. Such a horse will wait until within reach, when he will kick, strike, or bite, so quickly that no firmness or quickness of action would save a man. In such a case, resort to any means most convenient and safe that will give sufficient control to enable subjecting him to the regular treatment. If no halter or bridle is on, the following course may be adopted: Put on a halter as described in Colt Training, tie up the head, put on a bridle, or one or two War Bridles, get him out on a sodded place, and subject him to treatment. Of course if the stall or room is large enough, he can be subjected to treatment there.

The point of making the horse sufficiently gentle to be handled and used while free from rigging or restraint of any kind, must be thoroughly established as a foundation upon which this after-treatment must be based. Unless this can be done, the horse cannot practically be made safe. In my experience with these cases I make the lesson, if I can, a quick, overpowering rush of force, which breaks up all resistance, and makes him submit before he warms up,

being careful not to strain, bruise, or over heat the horse. But should he warm up, and fight with such energy that I cannot force his unconditional submission, I aim to carry the treatment simply far enough to make him sore. This is sometimes difficult to do, as these horses, especially the cold-blooded cases, may be so sullen in their resistance they cannot be made sufficiently sore to do any good. At any rate, the lesson must be repeated to the point of producing unconditional submission, or there cannot be any hope of success. The horse should be tested the day after treatment, when the effects can be best discerned. If the least vestige of resistance be found in him, it must be immediately overcome by more or less repetition of treatment.

The worst horse of this character I ever found was a blind, gray stallion in Pittsburg, Pa. This horse was a strong-muscled, heavy-boned fellow, with a remarkably fine head, and was a perfect model in points of strength and endurance. Ordinarily, he showed every indication of being naturally gentle, but by bad training had become vicious, and when roused or excited was a perfect bull-dog. Though compelled to handle him at a great disadvantage in a barn, I succeeded, after much effort, in making him sufficiently gentle to handle for the time, which was in reality a great feat.

Sometimes stallions, especially of this character, are liable to develop very peculiar whims in the way of affection or hatred. I have frequently found horses that would be perfectly gentle toward certain persons, but entirely unmanageable toward others. I will give here one very marked case, formerly owned by me. A ten-year-old Gifford-Morgan stallion, owned in Bath, Steuben Co., N. Y., was of a fine, intelligent, docile disposition naturally, but

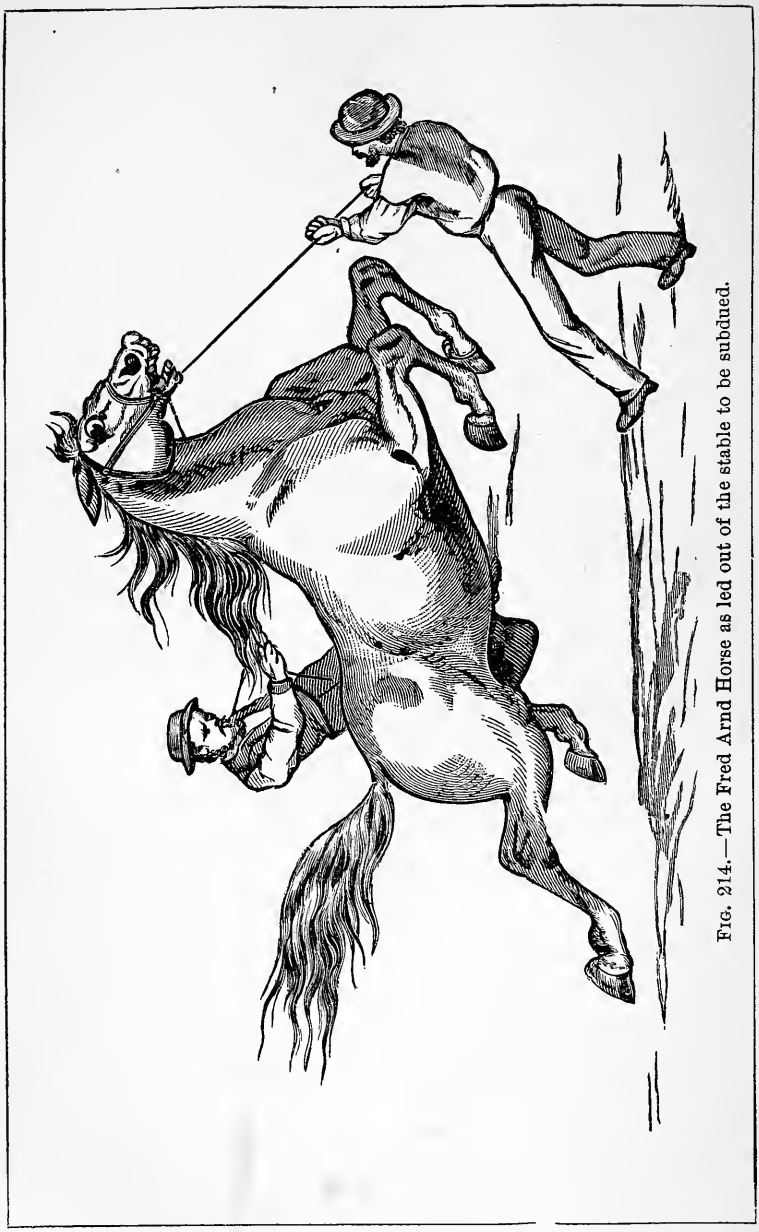


Fig. 214.—The Fred Arnd Horse as led out of the stable to be subdued.

when excited he showed an under-current of great will and courage. He was raised in Gowanda, N. Y. I bought him for the purpose of training him to drive without reins, and succeeded in making him drive very nicely, holding him gentle. For a stallion, he was singularly free from all inclination to bite, and other habits of viciousness. Later, I sold this horse, with another, for breeding purposes, to Fred Arnd, a hotel keeper in Bath, N. Y. Mr. Arnd (who was

FIG. 215.—The Fred Arnd Horse as seen by the writer four years after being subdued.

somewhat intemperate in his habits) one day perceiving the horse acted as though about to bite, whipped him severely. Happening in the stable at the time, I found Arnd in the horse's stall, and greatly excited from the exertion of kicking and whipping. I told him emphatically that he must not whip and abuse the horse in that way. If he did, he would surely in a short time make him so vicious he could do nothing with him. I advised him at once to give the horse some apples, and handle and caress him until over the excitement. But he disregarded the advice, and about a

week afterward I again heard a row in this stall. Proceeding to the place, I found Arnd with hat off and face red with passion, in the act of whipping and kicking the horse. I again told him in the most positive terms that he could not whip and abuse the horse in that manner without spoiling him, and that he must on no condition repeat it. As before, I urged him to treat the horse kindly, give apples, etc.; but, as before, my advice was disregarded, and as the result, in less than a week afterward he came to me and said, "That horse is so vicious no one can go near him. I am afraid he is completely spoiled. If you can and will break him for me, I will do anything you require."

I found the horse perfectly furious, with eyes like balls of fire, and ready to jump at any one who might approach. He did not seem to have the least recollection of me, and it was with the greatest difficulty I was able to get him out of the stall, and across the street into my tent. I subjected him first to Second Method, following with First, which he resisted furiously. I threw him fully a dozen times before he gave up the contest, when he quieted down, and seemed to fully recognize me. I talked to him and caressed him now for some time, walking around with him, when he would follow me around perfectly gentle. I now directed him to be placed in the care of a quiet, careful man, and instructed him to make it his business to visit the horse frequently in his stall, give an apple or two each time, caress and talk to him, and on no account to allow Arnd to go near or in his sight until I advised it. The treatment was continued two weeks, the horse acting just as gentle as before. Now while standing at his head I directed Arnd to come inside the door of his stall. The horse knew him instantly and became greatly excited, but

I managed, however, to keep him quiet while Arnd was near him.

I soon afterward left the place, but at the expiration of about four years I again visited that part of the State professionally. At Merchantsville, in the same county, I was surprised to find this horse. I was informed that at the moment Arnd would come near, the horse would become furiously excited and seem ready to jump at him, but was perfectly gentle toward others. Convinced that he could not manage him, he sold him to his present owner, a resident of Merchantsville, who used him for breeding purposes and for a family driver.

The man told me his wife could hitch up the horse and drive him as well as any old family horse, and he could take him out in the street by the halter and play with him with all the freedom he could with any pet horse. "But," added he, "were he to see a bald-headed man, it would make him so furious he would kill him if he could get at him." Mr. Arnd was bald headed, and the horse retained his peculiar repugnance to such an appearance. I took him into the streets by the halter, and found he was just as obedient to the whip as when I owned him, over four years before.

In training this horse to drive without reins, I was compelled a great many times to punish him with the whip very severely, possibly as hard if not harder than Arnd did, but I was always careful never to leave him smarting from the effects of such punishment. I at once gave him apples, etc., until cool and quiet. It is impossible to teach a horse to drive without reins, without at times whipping quite severely. This must be done to force obedience to the whip, or the horse cannot be relied upon.

Godolphin Arabian.

In concluding this chapter, I will give the romantic story of the famous "Godolphin Arabian," the most noted sire of the English thoroughbreds, copied from a story by Eugene Sue, published in *Wallace's Monthly*, 170 Fulton St., N. Y. The editor of this journal, who is very careful authority, states in conclusion as follows :—

"As a matter of course we must not expect historical

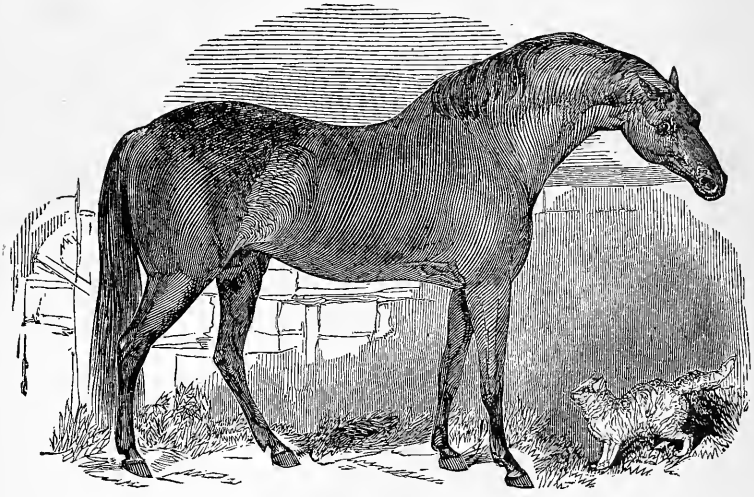


Fig. 216.—Godolphin Arabian. From Stubb's picture.

accuracy in a romance, but there are not many things in this that practically need correction."

I include a portrait of this famous horse, taken from Stubb's picture.

"The story opens with an English philanthropic Quaker, who, while on a visit to Paris, in 1732, received letters from home, announcing that his only daughter had gratified his fondest hopes by making him a grandfather, and, according to the custom of his sect, he resolved on evincing his gratitude to the Giver of all good for the fortuitous event by performing some charitable action. In his progress on this work of mercy—it was a dreadful

cold night in the latter part of January—he saw a great crowd at the foot of the Pont Neuf, and a horse, in a heavy cart, loaded with wood, attempting in vain to draw his burden up the ascent, while the carter was urging him on with brutal severity. All the efforts of the animal to move forward were ineffectual, and, driven to desperation by the lashings of his hard taskmaster, he plunged with so much violence, the ground being extremely slippery, that he fell on his knees, and was unable to rise. The carter renewed his blows, and with horrid imprecations seized the bit of his bridle, attempting to force him up, but with such violence that the mouth of the poor animal was filled with blood. With violent efforts, he at last got on his legs, but only to fall again, when, turning on his side, he lay trembling, covered with sweat, and his eye reproachfully fixed on his inhuman tyrant, who, unmoved by his piteous groans, kicked him repeatedly on his streaming nostrils, till every one cried 'Shame!' but all were too much afraid of his known brutality to further interfere. Their horror was increased when the fellow, going to the tail of his cart, took out a handful of straw, and twisting it into the form of a torch, and lighting it, was in the act of applying the brand to the poor animal's foot, when the compassionate Friend interfered, arrested his arm, and exhibited fifteen louis-d'ors spread on the palm of his hand, offering the whole as the price of his purchase. Although he had treated the execrations of the multitude with contempt, the 'timber-merchant' was not proof against the glittering coin, and crushed the torch under his foot. The purchase was agreed upon, the horse disengaged, and the parties proceeded to the driver's stable, to complete the contract.

Fig. 217.—Godolphin Arabian. From Stubb's picture. By J. C. Beard.

"The carter, mollified by receiving the money, so far beyond his estimation of the value of the animal, said he ought, in justice, to tell the purchaser that the horse was the most malignant and ungovernable brute he had ever met with, and so dangerous to approach that he was obliged to put his corn into his manger before he had entered the stable; that, from his vicious habits, he had bought him for a mere trifle, having given only twenty crowns for him; that 'the beggar,' when in the humor, would draw well, but when he had a heavier load than usual, would play him the

same trick he had done that day, and nothing but extreme severity would induce him to do his work. He was also so cunning as to utter groans on the slightest punishment, and then he would put on the appearance of submission till he was released from the vehicle, when he would kick and run at him with open mouth, in the most savage manner. The only way he could subdue him was to keep him constantly in the shafts, so that he could not lie down, either by night or by day; and he placed both horse and cart under a shed, for protection from the weather, the only sleep he got being as he stood. Once a week (on Sunday) he permitted the Moor to release him, and then the three, Agba, Scham (for such was his Moorish appellation), and the cat, seemed in a state of ecstasy.

"The carter goes on to state that an uncommon attachment subsisted between the three; that the Moor doated on the horse, having accompanied him to Paris from Barbary, and that the cat would jump on his back, purring continually, the horse whinnying in evident gratification at his presence. He then proceeds to say that he had purchased the animal from one of the royal cooks; and, on the Quaker expressing his astonishment that an animal so meager should ever have belonged to the king, the wood-man proceeded to state how he came into his possession.

"Scham was employed in the most menial capacity, drawing a covered wagon from the Paris *cuisine* to that of Versailles, but was so vicious, and so savage with other horses, especially if any mares were in sight, that they could do nothing with him, and the comptroller ordered him to be sold. No one, however, would purchase him, not only from his known character, but because he consumed more food than he was worth; and he was at length given to one of the cooks, to get rid of him, on condition that he would find him sustenance. It appears, however, that his new master kept him on short commons; for he actually attempted to make a meal of the cook, having seized him with his teeth, and bitten a large piece of flesh through his clothes. This was enough for the *cuisinier*, who determined to get rid of the vicious brute. He accordingly sent for the wood-merchant, and offered to sell him the horse for thirty crowns, but eventually parted with him for twenty.

"M. Sue then proceeds: The driver spoke truly; the horse so lately put to the drudgery of the wood-merchant's heavy cart, was one of eight Barbary steeds, which the Bey of Tunis had sent as a present to Louis XV., in 1731, in consequence of having concluded a treaty of commerce, which was effected in his majesty's name, by M. the Viscount de Manly, a commander in the king's navy.

"On the arrival of these animals in Paris, they, for a short time, attracted the attention, or rather the curiosity, of the king

and his court; but, from their wild appearance, their restless and haughty deportment, their lean and angular forms, rendered more so by the fatigue of the voyage, they were received into the royal stables with perfect indifference, and, subsequently, with contempt. M. Sue accounts for this from the prevailing fancy of his majesty for the great Norman horses, both for war and the chase, and more especially for those bred in Suffolk—short in the loins, well knit together, going close to the ground, and termed *thick-set.* As the king's name is a tower of strength in war, so in fashion his taste is paramount, and these Barbary horses excited the greatest raillery and scorn—their deep chests, their small mouths, their beautiful, nervous, and bony forms, so typical of the character of this famous race, and religiously preserved pure in the East, were all lost on king, courtiers, equerries, and grooms.

"Of the eight Tunisian slaves sent from Africa by the Bey, Agba alone remained, the other seven having returned to their native country. The poor mute was so attached to Scham that even the natural affection for home was disregarded, and, though excluded from the royal stables, he hovered about their precincts for the purpose of seeing his favorite whenever he was suffered to pass the door, living on the charity of those who pitied his unhappy condition. Since he had become the property of the wood-carrier, the Moor had taken up his quarters in the shed for the sole purpose of enjoying the society of the Barb, and obtained his food by begging, for he (the carter) refused to encourage him, believing that his witchcraft rendered the horse so vicious. He suffered him to remain in the shed, as he was much amused to see the evident affection subsisting between the mute, the horse, and the cat. On his return home, Agba and Grimalkin were always in waiting, the former squatting down disconsolately, with the cat curled up by his side. On permitting him to give the horse his food, the Moor would rise up in ecstasy, embrace the animal, take his head between his hands, jump on his back, then dismount, and creep under him; by all of which endearments the horse seemed as gratified as himself. He would whinny, and appear to talk to him, as if rejoiced to see him. On the other hand, if the Moor was not in the shed, he became furious, stamped with his feet, laid back his ears, and attempted to attack the carter. On one occasion the Moor was not in the shed, but returned when he was chastising the horse, and was so exasperated that he seemed inclined to attack him, but he showed him his shoulder-of-mutton fist, and the demonstration was sufficient.

"When the Quaker, who had been struck with their mutual attachment, told the Moor that he had purchased the horse, and that both should accompany him to England, the poor fellow showed the most extravagant joy, threw himself on his knees at

the feet of the Englishman, and placed his foot on his head, in token of submission, and showing that he would be his slave for life. He removed the cumbrous harness with which Scham was caparisoned, in a sort of frenzy, believing that the malign influence had departed from his companion. The hard-stuffed collar covered with blue sheepskin, the rusty hames, the ponderous wooden saddle, and the thick bridle, were all dashed to the ground in the greatest indignation; then, drawing from one of the pockets of his cloak a horse-hair glove, he began to rub down Scham, after the manner of the Moors of Tunis (who never use a currycomb), the friction of which soon renders glossy the handsome and fine skin of the horses of the pure race. Scham, thus unharnessed, could be better examined by the Quaker. He was a brown bay, about fifteen hands high, with a white spot on the off hind leg. He was terribly thin; his sharp bones seemed to pierce through his skin, naturally so fine and delicate that he was covered with wounds by the friction of the heavy collar and shafts of the cart. The dust and dirt which covered the poor animal rendered his coat, formerly so bright and smooth, quite dull and rough, and his mane was matted with filth. Notwithstanding his distressing and miserable appearance, a judge of horse-flesh would still have admired his bony form; and on seeing his deep chest,—sure indication of capacity and strength of lungs,—it was evident that Scham could perform, without the slightest difficulty, a lengthened course. Judging also from the construction and strength of his well-proportioned limbs, his speed must be prodigious; and his large hams, flat and so singularly tapering off, seemed steel springs to his iron frame. These, added to his uncommon beauty, and his graceful tail, flowing like a plume of silk, proved him to be an illustrious descendant from the purest caste.

"The Quaker shortly after returned home, accompanied by his purchase, his mute attendant, and the faithful cat.

"Arrived in England, Scham is located at Bury Hall, the residence of the Quaker, situated about fifteen miles from London, on the banks of the Thames; and in a short time, through the care of Agba, and plenty of nutritious food, he recovered his pristine form, so that no one could have believed him to be the miserable object so cruelly treated at the foot of the Pont Neuf. Agba was feared and despised by the other domestics, for they had not the Quaker's tolerance; but they respected him for his attachment to the horse and devotion to his master.

"A cloud, however, soon lowered on the destiny of Scham: his vicious disposition began to show itself, and he would suffer no one to ride him but Agba. He had defeated all the attempts of one Tom Stag, a rough-rider, to reduce him to obedience, and had put him on one occasion in peril of his life, by almost crushing his

leg against a wall. He had also thrown his master's son-in-law, Dr. Harrison, and this was deemed the climax of ingratitude by the benevolent Quaker, who, in consequence, determined to part with him.

"Scham was then sold to one Rogers, landlord of the Royal Lion, a large inn near Charing Cross, to whose stables he was forthwith transferred; the Quaker making Agba the offer of remaining in his service, or receiving a sum of money. The mute, determined not to lose sight of his companion, accepted the latter, and, accompanied by the cat, followed Scham to London, and took an obscure lodging as near the inn as possible; for Rogers, having the same impression as the Paris carter, that the deviltries of the horse were owing to the malignant influence of the Moor, had rejected all further intercourse. Every attempt to enter the stable was indignantly resented, not only by Rogers, but by the subordinates in his employ, and Agba had the satisfaction of seeing two brought out on shutters, and carried to the hospital, from the wounds received from the 'born devil,' the appellation Scham had obtained from his new master. Agba, refused all admission to the stables, was almost in despair from being unable to obtain a sight of his favorite; and, determined at all hazards to accomplish his purpose, he scaled the walls which environed the stables, and being caught by Rogers, was committed to Newgate on a charge of attempted burglary. Here, unable to express his innocence, he sunk into despair, although his mild demeanor had excited the pity of his jailers. The Quaker's housekeeper, being called to the prison by a relative who had come under the ban of the law, and learning the cause of the poor Moor's incarceration, proclaimed her conviction of his innocence, and gave so much of the history of Scham, and Agba and his cat, as to produce the greatest commiseration for the unfortunate mute.

"His case coming to the ears of the young Lord Godolphin, who was struck with the attachment of the horse and rider, he interested himself in his behalf, had an interview with the Quaker, learned his history, purchased the horse from Rogers, who withdrew his prosecution, and poor Agba and Scham were sent off to Gogmagog Hall, there to be treated with the same indifference and contempt that Scham had experienced in the royal stables of Louis XV.

"Hobgoblin was then the lord of the ascendant in the seraglio of Gogmagog; and so cruelly, in Agba's opinion, was Scham neglected, that he often wished the Barb enclosed within the den of Rogers, where death might have relieved him from his misery. The progeny of Hobgoblin had been hitherto successful above all their competitors; and Lord Godolphin having purchased Roxana, by Flying Childers, out of Monica, for 600 guineas—a great price

at that period—he resolved to form a new dynasty in the future generation of Roxana and Hobgoblin.

"M. Sue then gives the *liaisons* of Roxana and Scham; how Roxana refused the caresses of Hobgoblin, and, when she neighed indignantly at the approach of the Lord of the Harem, she was answered by one so loud and shrill that the hills re-echoed the sound; that Roxana, recognizing the impassioned cry, expressed the most lively astonishment and delight, and at the moment Hobgoblin was brought into the paddock, Agba opened the door of the stable, and Scham rushed in frantic energy upon his rival. A tremendous battle ensued, Hobgoblin being eventually driven from the field, and Scham triumphed both in love and victory.

"Lord Godolphin, exasperated at the defeat of his project, immediately ordered the culprit off to a stud-farm at a distance of sixty miles, where he was turned out to seek his food on an almost barren common.

"Two years had elapsed, when Agba was aroused from the most painful reflections by approaching sounds, and was no less surprised than gratified by a courier announcing his lord's commands to return to Gogmagog; and in less than one hour, Agba, Scham, and the cat were on their way to the Hall.

"The cause of this recall is explained in a few words. Lath, the produce of Scham and Roxana, showing some fine racing points, the prejudices of Lord Godolphin and his stud-groom began to subside. With a force and vigor beyond his years, he excelled all his rivals in their exercises; and the progeny of the Darley Arabian, brought from Aleppo in 1717, having proved successful in all their contests with the indigenous breed, people began to wonder that they had so long neglected the source of so much beauty, and purity of blood. In addition, Lath had beaten all the descendants from the hitherto renowned Hobgoblin.

"The author then jumps over four years, and, in 1738, three sons of Scham, which had beaten everything opposed to them, were engaged in influential stakes at Newmarket—Lath in one for five-, Cade in one for four-, and Regulus in one for three-year-olds. Lord Godolphin, partaking of the now generally prevailing opinion in favor of the Arabian blood, which in every instance had defeated all competitors, felt so confident that the three descendants of Scham would carry off the respective stakes, that he resolved that the sire should partake of the triumph of his sons; and the formerly despised Barb was led on the heath, arrayed in purple, and mounted by Agba in magnificent Oriental costume, two grooms on each side (for safety) holding him by silken cords attached to his golden bridle. On his appearance, the air resounded with acclamations. The predictions of Lord Godolphin were realized; and each of his horses having won the prizes for which

it had contended, the spectators appeared in a state of ecstasy, and cheered with renewed applause, which Scham received with dignified composure, as if conscious of his claims to distinction. As to Agba, he was in a state of absolute hallucination—the malign star had disappeared, and the glory of his horse was established. They returned to Gogmagog in triumph; and to prove his admiration of the wondrous powers of the Barb, Hobgoblin's splendid stable was appropriated to Scham, and the words, GODOLPHIN ARABIAN, which the noble lord had given to Scham, were engraved in letters of gold on its marble pediment.

"This celebrated horse died at Gogmagog, in 1753, aged twenty-nine. Grimalkin had preceded him to the tomb, and Agba did not long survive."

Mr. Wallace here remarks: "And thus ends Mr. Eugene Sue's biography of Godolphin Arabian," adding, as stated at the commencement, that as a matter of course we must not expect historical accuracy in a romance; but there are not many things in this that practically need correction. He also adds the following statement:—

"The origin of the horse is really unknown, and all that can be said on this subject is mere conjecture. It is a remarkable fact that this horse attained the very highest pinnacle of fame twenty years after his arrival in England, and yet there was no one, even in that brief space of time, who went to the labor and trouble of tracing and determining his true history. The same old story is rehashed over and over again, that Mr. Coke brought him from France, but nobody has sought to know from whom or how he came into Mr. Coke's possession. He was called an Arabian, but the best judges were inclined to the view that he was a Barb. In forming this opinion, however, they were governed entirely by his conformation, which is only a rule of approximate accuracy, and never safe to state with certainty. The old records say that Mr. Coke gave him to Roger Williams, keeper of the Saint James Coffee House, London, and that he presented him to the Earl Godolphin. The great success of the Darley Arabian, some twenty years before, had made Eastern blood very popular at this time; and it has always been a conviction with me that Earl Godolphin knew more about the blood and origin of this horse than any of the writers who have undertaken to enlighten the world about him, or he never would have bred Roxana and his other good mares to him, untried as he then was. The story of the cat was not invented by the novelist, but is founded on truth. Mr. Pick, in his *Turf Register*, after enumerating a few of the more prominent of his get, remarks that 'every superior horse of the present day partakes of his valuable blood.'"

CHAPTER X.

MISCELLANEOUS HABITS.

To Catch a Horse.

If a young colt is frequently petted by scratching the mane and tail, giving apples, etc., care being used not to arouse his fear or resentment in any way, instead of running away when approached, he will soon wait or come forward to be petted and rewarded. It is frequently the case that ladies who are in the habit of petting horses, are able to approach and catch them in the field without the least difficulty, while they cannot be approached at all by men. The reason is that women are more kind and gentle in their treatment, and always ready to caress the horse, and reward with a little sugar, or something else of which he is fond; neither do they take advantage by whipping or other abuse; while men, who are frequently in the habit of stoning the horse, or hitting him with the halter when turning him out, cannot go near him, or succeed in catching him only after the most prolonged effort, on account of the fear and repugnance such treatment creates.

When a small boy, I was presented with a young donkey. Of course I was delighted, and would occasionally put oats in my pocket, and feed her from my hand. This soon made her such a pet that as soon as she saw or heard me, no matter how far distant, she would whinny and run toward me, put her head under my arm, and try to get her nose into my pocket for the oats with which I rewarded

her. If treated in like manner, the horse can be made to come to his master, and follow him with affection and confidence.

If the colt or horse is wild, and tries to pull away or keep the head out of reach when approached, put on the War Bridle, and train him until he will follow promptly. But if so wild or vicious as to require general treatment, subject to either method most suitable until submissive, when make the point of teaching to follow very thoroughly. This will be easy enough, but we wish to do still more, namely, to be able to walk up to the horse from some distance without his running away, also to make him come at command, and stand quietly to be haltered. The course I usually pursue is as follows: After making the horse follow, lengthen the cord to seventy-five feet or more, and let it drag on the ground. If I have not enough of the regular kind of rope, I attach a piece of bed-cord. The War Bridle should be changed to the Second Form, to prevent its slipping out of the mouth, with the part over the neck placed well back. There is no difficulty in approaching the horse within the length of the cord (twelve or fourteen feet) used in the training; but when beyond this distance, and especially when the horse once learns he is beyond control, he will soon learn to keep out of reach. On this account it is necessary to make the cord long enough to convince him that he is within control when beyond this distance. Step away twenty or thirty feet, and walk up quickly toward him. If he turns to run, simply catch up the cord and jerk the head around; then approach, caress him, give apples, etc., and walk away again. So repeat, going a little farther off at each time, until at the end of the cord. It is necessary, of course, to make this lesson thorough, until the confidence of the horse is won. In some cases it is advisable to go through with the form of

haltering and unhaltering, leading out into the field, walking toward him and back, singing, whistling, and occasionally giving him an apple, etc.

In training Turco, referred to in "Personal Experience," after getting him so he would come to me when thirty or forty feet away, he at one time jumped through a gap in the fence into an adjoining field, where he raced around for some time, enjoying his freedom. Though I was considerably annoyed, I did not try to catch or run after him, as this would only reveal my weakness, and confirm him in the habit of running away. I simply walked around as though indifferent, until he became tired and went to grazing, then, although I approached him cautiously, when within a few feet of him he again ran away. He repeated this several times. I strolled around until finally able to get near enough to catch him by the mane. To attempt any punishment now would only undo a great deal of past good treatment. Instead, I scratched his mane, rubbed his nose, walked around a little, and finally told him to come along, when he followed submissively back to the yard.

I now put on the War Bridle, Second Form, and, as before explained, attached nearly one hundred feet of cord to it, which I let drag on the ground. I then went on with the lesson. As he came near the gap, he again shot through like an arrow. I simply caught up the cord, and stopped him so quickly as to almost throw him down. Finding himself fairly caught, he came back directly upon being called. I repeated the experiment, and three times in succession he jumped through the gap; but at each time I jerked him back when about seventy-five feet away. After a few repetitions, no matter how near he went to the gap, he would not attempt to jump through. I now petted and rewarded him by giving apples, etc., as usual. I repeated the lesson several times afterward in the yard and

open field, to thoroughly fix the impression, and he never forgot it. I finally trained him so I could let him run up the street twenty rods or more, and then could call him back to me instantly at the crack of the whip. The secret of this was the reward I always had for him.

In turning a horse out to pasture he should never be started violently when the halter is taken off. There should be no effort to deceive by carrying oats in a pan, or rubbing ears of corn together, etc., and when allowed to come near enough, to rudely grasp, halter, and lead him off. The reward of corn or oats should be promptly given, with other expressions of kindness. Indeed, it is in most cases best to commence by occasionally going into the field and carelessly approaching the horse, and giving him something of which he is fond, until his confidence is won. A sensitive horse always partakes in a great measure of the character of the owner; if tricky and deceptive, the horse will become so. The only way to make the horse honest and confiding, is to be honest and kind in his management.

Cribbing.

This is a habit for which there has been no practical remedy. Many claim that it is caused by indigestion, and that by neutralizing the gas generated in the stomach in consequence, a horse will cease to crib. Mr. O. H. P. Fancher, especially referred to in the chapter on "Subjection," was the most pretentious advocate of this theory; but I have never known or heard on any reliable authority of any case being cured by giving medicine. It has also been claimed that cribbing is caused by the teeth pressing too closely against one another, the remedy for which is sawing between them. I have known of a great many cases treated in this way, but without any

success, except that in some cases the habit is prevented for a time by the soreness produced by the filing. Driving wedges between the teeth has also been resorted to, the effect of which would be such intense pain as to prevent the horse from cribbing for some little time. It can be seen that all these pretended remedies are practically of no account.

It is a little singular that a horse will not crib on anything that is lower than the knees, consequently a sure way to prevent the habit is to tear away the manger, and feed the horse from the floor or from a basket.

To break up the habit, the only practical remedy is punishment, as hereafter explained.

When in Bath, N. Y., many years ago, I noticed that a horse when cribbing at a post in the street contracted the larynx and muscles of the neck forcibly during the act. Instantly it occurred to me to make the experiment of putting such an adjustment upon the throat-latch as would prevent it by the pain it caused. I went to a harness-shop, procured some six-ounce tacks, drove them through a strip of leather about half an inch apart, and filed the points sharp and of equal length. I laid this bit of strap on the inside of the throat-latch, so as to bring the point of the tacks under the larynx, and kept it in place by winding each end and center with a piece of waxed end. I now buckled the throat-latch long enough so that it would not touch the neck when in the act of eating or swallowing, yet so close as to bring the points of the tacks sharply against the muscles of the neck at the least attempt to crib, and stood by to notice the effect. The first

Fig. 218.—A horse in the act of cribbing.

time the horse tried to crib, he was hurt so severely that he jumped almost from the ground. In a short time he tried it again, with the same result; the third time he only gave a little nip, and then stood quietly for some time. I now had him changed to another location, with a man close by to note the results. He reported that the horse did not crib any more during the afternoon. I have broken several horses of the habit by this means, and think if the adjustment is made right, and continued long enough, it will be found to be the best means yet discovered of breaking up this habit. The point of success will depend upon the care with which this is kept adjusted. If there is large muscular development of the neck, the strap must be buckled shorter than when the neck is well cut out, as it is termed. Make the reproof severe at first; then keep the tacks so adjusted as to touch sharply when the habit is repeated. If the throat-latch is not on

FIG. 219.—The halter adjusted for cribbing.

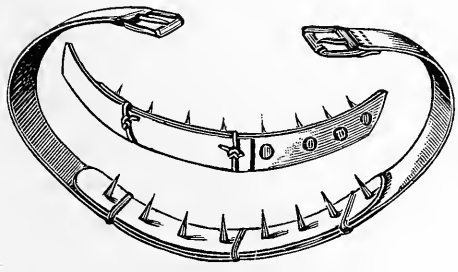


FIG. 220.—Throat-strap with tacks.

a line with the top of the head, the tacks cut the jaw a little below the junction of the head with the neck. If this is kept on a few days or weeks, and then taken off and again adjusted carelessly, there is likely to be a failure; for if the horse finds he can crib once with this on without hurting himself, he will be encouraged to repeat the effort, and will punish himself severely to do so. But if punished at first, and this is kept where it will hurt keenly at the least attempt to crib, and is left on a few weeks, it ought to be successful. It will not do to buckle a strap around the neck. The adjustment must be made to the strap of the halter, and the halter must fit nicely to the head. It must be made like a bridle, with brow-piece, so that it will not shift or move on the head. A boy broke five horses of this habit a few years ago; but he became careless, and failed on the sixth. There is, once in a while, an old horse of determined character that will crib in defiance of this or any other means. Such cases are, however, rare. A young, nervous-tempered horse will yield readily to the treatment, and but few horses will attempt to crib while wearing a muzzle.

If a strap be buckled rather tightly around the neck, a horse will not crib while it is on. This is, however, but a simple preventive. There is also the objection that gradually the horse may learn to resist, to overcome which, the strap has to be buckled tighter, which of course obstructs the circulation, and causes inflammation, thus producing serious and permanent injury. If a strap is used for this purpose it should be fully three inches wide, and buckled just tight enough to prevent the inclination to crib. A wide strap works a great deal better than a narrow one, and is less liable to do harm.

Wind-Sucking.

Sometimes a horse sucks wind without the habit of cribbing. I include a cut of a form of bit to prevent this, for which much is claimed. A practical horseman of experience gave me the point. He claimed that it would work perfectly in preventing the inclination to crib and suck wind. I include it on the strength of his statement. Procure a piece of gas-pipe about seven inches long. Drill a hole across each end, through which put in rings, as seen in cut; next, drill four or five holes, as shown in cut. The theory is that the gas in the stomach can not escape through the mouth on account of its being closed, and that instinctively the horse will bite on something to open the mouth and throw off the gas. With this bit in the mouth, the air passes through the small holes in the center, and out through the ends.

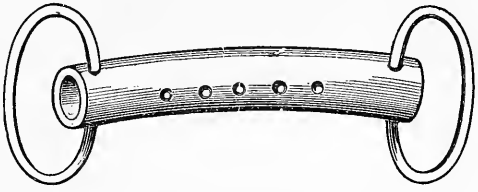


Fig. 221.—Bit made of gas-pipe for preventing cribbing and wind-sucking.

I would be glad if those interested would give it a trial, and report to me. It is safe and inexpensive. The gentleman referred to positively assured me that in several cases known to him it worked with perfect success.

Putting the Tongue out of the Mouth.

If the tongue is put over the bit, have a piece of thin sheet-iron, about two and a half inches wide and five inches long, with the ends rounding, and the edges filed smooth. Drill two small holes (see cut) near each edge, at the center, and fasten to the bit. Shorten the cheek-pieces of the bridle, so that the bit is drawn well up in the mouth. This

piece of iron renders it impossible for the horse to get the tongue over the bit. The simplest and best way of preventing this is to have the smith make a mouth-piece, as represented in the cut below, which is seen to be bent up, and comes so high in the mouth that the horse cannot get the tongue over; this works perfectly, and is not inconvenient to drive with. It should be bent up at least 2¾ to 3 inches, come well out to the cheek-pieces, and be filed smooth to prevent cutting or chafing the mouth. The tongue is sometimes, but not often, put out under the bit. For such cases the following treatment will work well:—

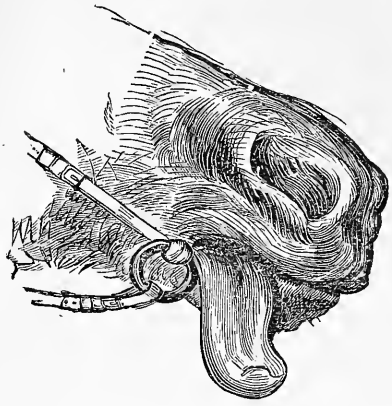


Fig. 222.—Manner of putting the tongue out.

Get three medium-sized bullets, and hammer them out to about an inch and a half in length. Drill a small hole through the end of each. Tie one to the center of the bit by a little piece of wire through the joint. Attach the others to the bit about an inch from the center (one on each side), so as to play loosely. (See cuts.)

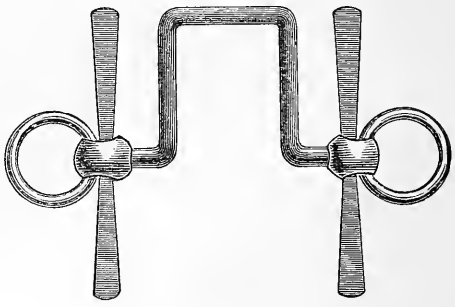


Fig. 223.

When this bit is in the mouth, these extra arrangements will so disconcert the horse that in his struggles to get them out of the way, he will forget to put the tongue out.

The next best way is to buckle a strap around the nose so that the mouth cannot be opened. This, of course, prevents the tongue being put out, and in a short time the habit will be broken up.

Pawing in Stall.

A horse will not paw much unless he can hear the noise; so a good method of preventing this habit is to muffle the foot by tying a piece of blanket around it. Next, by attaching a piece of chain or clog to the foot, as follows: Get a piece of chain about ten inches in length, run a short strap through one of the end links, and buckle it around the foot above the fetlock; or a piece of light chain can be fastened to a small block, and attached to the foot in the same manner. When the horse attempts to paw, the clog or chain rattling against the foot so disconcerts or hurts him that he will repeat the movement but a few times.

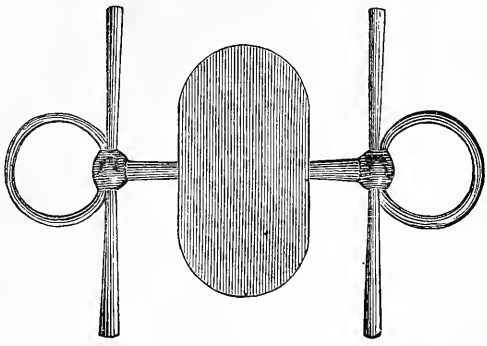


Fig. 224.

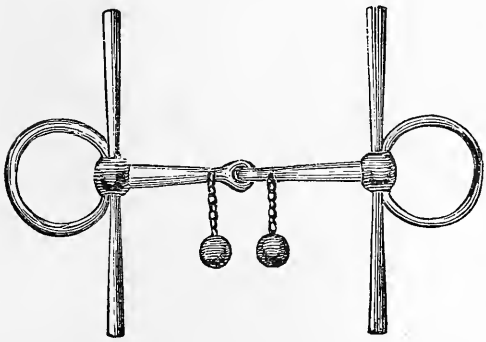


Fig. 225.

Kicking in Stall.

Kicking with one foot against the side of the stall is a habit which many horses are liable to learn, and, like pawing, it is sometimes exceedingly annoying; therefore it is important to be able to prevent or overcome it. In the first place, it is rare that a horse will learn to kick against the side of the stall if it be large and roomy. Large stalls are, in all cases, very important for the health and comfort of the horse, as well as for convenience in going around him. The simplest and best way of preventing this habit is to pad the side of the stall, which will prevent the sound of the striking, when the inclination to kick will soon be overcome. Or, attach a clog or piece of chain to the foot, as explained for pawing.

Another method is to tie some thorny bushes together, and suspend them over the place kicked, so as to swing freely when struck. When the horse kicks, the rebound will bring the bushes against the legs, so frightening and hurting him that the attempt to kick will be repeated but a few times. A clog may also be hung over the place struck or kicked, which, when struck, would react in the same way, and thus prevent a repetition of the habit. Making the stall wide, and padding the sides as explained, are the most simple and practical methods for preventing this habit.

Getting Cast in the Stall.

This is also caused by being confined in a stall that is too small. When the horse rolls and turns upon his back, he is so cramped and restrained by the narrow walls that he is unable to roll himself back to regain his feet. Sometimes the division of the stall is so short that in the effort to roll, his body comes across, and in contact with, the

ends, and, the head being held fast by the halter, it is impossible for him to get up; so a large, roomy stall would of itself be almost a complete remedy. The simplest way to prevent it is to tie one end of a piece of rope or cord to the beam or flooring directly overhead, and the opposite end to the head-piece of the halter back of the ears, leaving it just long enough to allow the horse to reach his nose to the ground. As he lies down and tries to roll, being unable to bring the top of his head to the ground, he is disabled from rolling. A small ring should be stitched to the top of the halter, to which the strap or cord can be easily and securely fastened when necessary.

Some horses are liable, by pawing, to get the fore foot, and in some cases even the hind foot by scratching the head with the leg, over the halter-strap, thereby becoming tangled and helpless in the stall. The halter should be hitched higher than common, though long enough to permit the horse to lie down easily.

Jumping over Fences.

Every dairyman knows that a cow or ox will not attempt to jump a fence, pull it down, or run, while a board is over the forehead, attached to the horns in front of the eyes; this simple means will usually work well upon cattle, but will not do upon a horse, because it gives too much freedom to see over the nose.

If a horse or mule, put on a halter that fits well to the head—a five-ring halter is best. Next find a piece of thin leather (an old boot-leg will do), about as long as the head, and from four to five inches wider than the head is at the eyes. Form it same as in cut, with a string attached at each corner. Attach the upper corners by the strings to the halter, where the brow-piece is attached to the cheek-piece. Tie the cords attached to the lower corners

back of the jaw (being careful to leave freedom enough for the jaws to act when eating). Let the ends now pass over the throat-latch, and make fast. The horse is simply disabled from looking ahead or over the nose, which will disconcert him sufficiently to prevent jumping or throwing the fence down. If an ox or cow, attach the upper corners to the horns, and pass the strings around the neck instead of over the throat-latch.

Tender Bitted.

Use a large, smooth mouth-piece, with leather cheek-pieces, so as to let the bit rest about an inch lower than usual in the mouth. Next try winding the bit with a piece of chamois-skin which has been saturated with tannin or alum, to harden the mouth.

Kicking Cows.

Many years ago a man who attended my class in Herkimer Co., N. Y., reported to me that he had a very bad kicking heifer, and as a matter of experiment he put the War Bridle on her and gave her a sharp lesson with it, as directed for breaking a colt to lead and drive. After a few minutes' treatment, he found that she stood perfectly gentle to be milked, and he had no more trouble with her. Some time afterward, while in the dairy counties, I gave this point to my classes, and I have since had a good many especially bad, kicking cows brought forward to be experimented upon, the treatment in all cases proving successful in a few minutes.

One of the most amusing incidents that occurred in making these experiments was at a little town near Jamestown, N. Y. At the time I carried canvas, and after getting through the regular experiments, a notoriously bad

kicking cow was brought in for treatment. As usual, a few pulls of the War Bridle made her stand to be milked as gentle as could be desired. While the class were amusing themselves over the ease with which the cow was controlled, and somewhat at the expense of the owner, with the cord still on, she suddenly, and without warning, rushed through the wall of the canvas, almost tearing down the whole tent, and ran through the main street of the town toward home. Every dog in the street took after her, making a most ludicrous scene, no one appearing more amused than the owner. He came into the class on condition that I would make the cow gentle to be milked at home. He never came back to report upon the success of the experiment. The course of treatment is about as follows :—

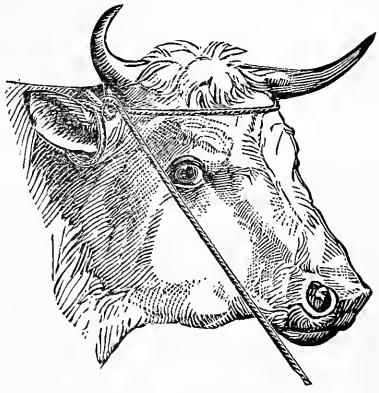


Fig. 226.—Arrangement of the cord for leading a cow.

Put on the War Bridle, Second Form, pull right and left a few times; then stand off at a safe distance, and pull a little upon the teats. If there is resistance, punish; so repeat, until there is no resistance. Sometimes the teats are sore, and the pain caused by milking is very severe. Take Gonlard's extract 2 oz., sulphate zinc 2 oz., lard 2 oz., and rub upon the parts a few times. This is a favorite remedy among dairymen for sore teats, cake in the bag, etc. This prescription I know to have been sold for fifteen dollars, and it is prized by dairymen in Northern New York, where the medicine is sold especially for their use.

To Lead a Cow Easily.

Tie a rope around the head under the horns, bringing the knot over the ear. Now bring the rope forward and under the ear, again forward over and under the cord. By pulling now, the cord will tighten around the ear, hurting so severely that the cow will lead freely.

To Force a Horse on the Trot.

During one of my early tours in Ohio, a horse-trainer came one hundred and fifty miles to attend my class. He stated that there was but one point in which he was interested, and if I could help him on that, it was all he desired. The point was, how to force and keep a horse on the trot under excitement. On this point he was very much interested, for the reason that he made the training of trotters his business, and it was indispensable that he should be able to do this. Also, because he knew of a mare that could trot very fast, but when driven in company with other horses, or excited in the least, she would break, and could not be made to trot, and on this account was regarded worthless as a trotter. He could buy her at a very moderate figure, and could make a big thing on her if he could break her; but he did not wish to purchase her unless he felt confident of success in her management.

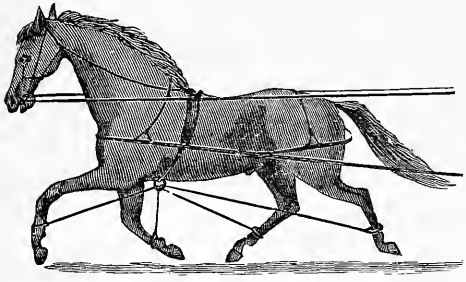


Fig. 227.—To change a horse's gait.

This was a new point to me; but on the impulse of the moment I advised him to try the Breaking Rig as shown by cut on page 180, at first to work her slowly and gently

until accustomed to it; then gradually push her under excitement, cracking the whip, etc., and then driving her with other horses, gradually working up in same manner without restraint of rig.

I had noticed when driving with this rig that a horse must either walk or trot; for the instant he struck a run, both legs coming back at the same time shortened the cord so much as to tangle and hurt severely, and consequently it must work in this case.

He went home, bought the mare for $375, made the experiment, and was successful beyond his expectations, soon being able to put her under the whip, and drive her under any excitement, with other horses, at the top of her speed. Within three months he sold her for $1500. Happening to meet me some time afterward, he gave me the above facts, at the same time stating that he then had another horse of the same character on which he expected to do equally well.

The gait of a horse can be changed from pacing to trotting, or from trotting to pacing, by passing the cord or strap from the hind foot to the opposite fore foot—through rings in the belly-band for trotters—and from hind to fore feet direct for pacing. (See cut 230.) This will not, however, be found to be of much practical value.

CHAPTER XI.

TEACHING TRICKS.

In this chapter I give the portraits of my old group of trained horses and ponies, whose performances were regarded with such great interest by all who witnessed them, that for a number of years I was compelled to give an extra exhibition daily for the benefit of ladies and children, for which a regular admission fee was charged; and it was universally conceded that these exhibitions were more interesting than those of any circus. The performances of Blind Billy were regarded as especially remarkable, from the fact of his being totally blind. He is, without question, the most remarkable performing horse that has ever been exhibited in this or any other country. I give a very fine portrait of this remarkable horse, sketched by a leading artist.

The details of teaching a few tricks, which I give in this chapter, will be of special interest to farmer boys, who may desire to train their colts in this way. A horse seems more intelligent and tractable when trained to perform a few simple tricks, such as telling the age, kissing, bowing his head, kicking up, turning right and left, or following with the whip, etc., all of which any intelligent boy can easily train a colt to do.

In training a colt or horse to perform these tricks, there should be no hurry, or effort to teach more than one thing at a time. Make the lesson short, and repeat until thor-

Fig. 228.

THE AUTHOR'S OLD FAVORITE GROUP OF TRAINED HORSES.

oughly learned, when another can be taken up, but do not continue the lesson long enough to excite or confuse the horse.

To Follow by the Whip.

One of the simplest and most interesting tricks to teach a horse is to follow at the motion of the whip, without bridle or halter. It is even quite useful, as it teaches a horse to follow at command from one part of the barn to another, or to come out of his stall without attempting to get away. Full details of teaching this trick are given in the chapter on "Colt Training."

To Nod his Head, or Say Yes.

To teach a horse to bow, or nod his head, prick him lightly on the back with a pin, and continue until in his effort to avoid the annoyance he drops his head; then instantly stop the pricking, and caress him. Repeat the pricking until the head is again dropped, when caress and give him something of which he is fond. Continue to alternate in this way with the pricking and caressing until at the instant a motion is made toward the back, or even to take a pin from the coat, he will drop his head.

To Shake his Head, or Say No.

To teach a horse to say No, prick him lightly on the top of the shoulder with a pin until he shakes his head, when stop and reward him. Repeat the pricking until at the least motion toward the withers the horse will shake his head.

To Tell his Age.

To teach a horse to tell his age, prick him lightly on the back part of the leg until, to avoid the annoyance, the

foot is lifted, or there is an effort to paw; for this, stop and caress him. Repeat until the least motion toward the leg will cause him to paw the ground.

In teaching this trick, the body is naturally bent a little while in the act of pricking the leg, and by repeating, the position will soon indicate to the horse that he must

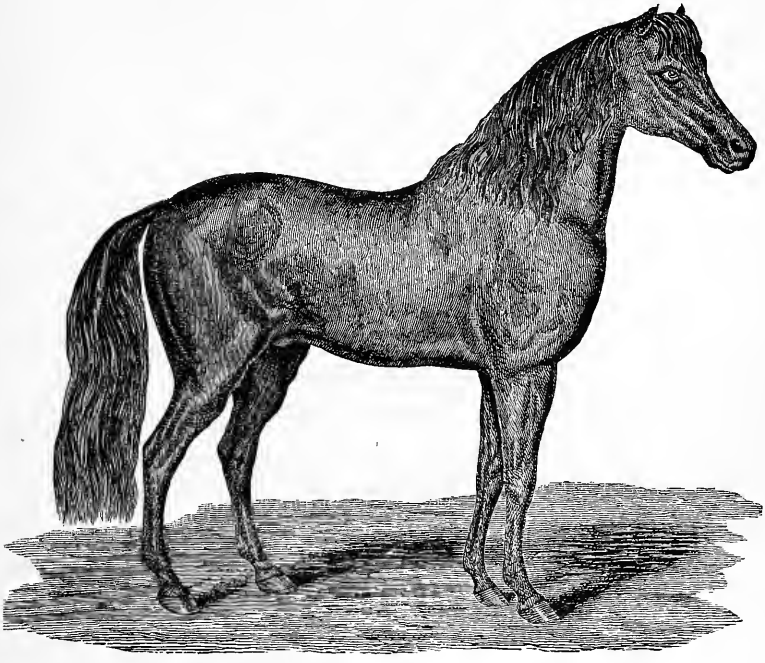


Fig. 229.—Blind Billy.

paw. This position is to be maintained until he paws four, five, or six times, or as many times as he is years old, when the position is changed, and the pawing ceases.

To Kick Up.

To teach a horse to kick up, simply prick him on the rump with a pin until there is an inclination to kick up, when, as before, stop and caress him. Repeat until the

least motion toward the rump will induce him to kick up; then touch with the whip, and repeat until at the mere motion of it he will kick up.

These tricks may be made quite interesting by talking to the horse somewhat as follows: "Tommy, I want you to tell how old you are; will you do it?" and signal for the horse to shake his head, as if refusing. Then exclaim, as if surprised, "Oh, you can't tell your age, I suppose, without being paid for it! Will you do it if I give you a

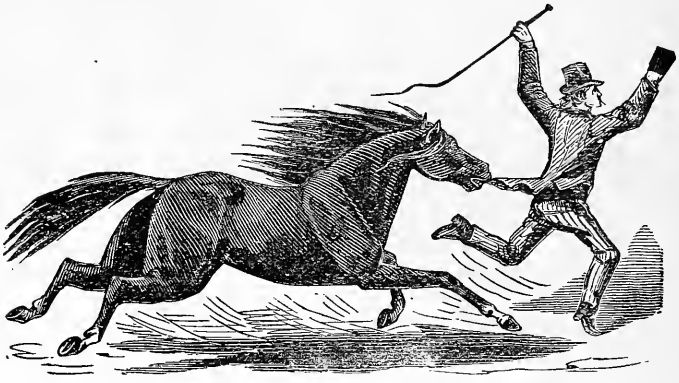


FIG. 230.—Blind Billy running after and catching his trainer when playing Blind Man's Buff.

lump of sugar?" and signal for him to nod his head. You can now signal for him to tell his age, and when he has done so, it gives him an air of sagacity which is very amusing and interesting. Again, you may ask, "What will you do to one who does not treat you well?" then signal for him to kick. His prompt obedience, of course, indicates to the spectators that he understands what is said to him, when in reality he is only obeying the signals which have been taught him. The nice point lies in giving the signals in such a manner that they will not be noticed or understood by the spectators.

Teaching to Kiss.

Kissing is a very simple trick to teach a horse, and it adds greatly to the interest of those already explained. Stand facing the horse, with the right side turned partly toward his left shoulder, and let him take a piece of apple from your hand which is held toward his mouth. Bring it nearer each time, and finally let him take a piece in the same manner from between the lips. When he does not reach forward promptly to take the piece of apple from the lips, prick him with a pin at the point of the shoulder. Repeat until he gets the idea of avoiding punishment by bringing his mouth to that of the trainer when desired. Now put the apple farther into the mouth, which will compel him to open his lips to get it. Commence lessening the size of the apple, finally giving it to him as a reward after he has performed the trick of bringing his mouth to that of the trainer. This will teach him that by doing this he will escape punishment and receive reward.

To Lie Down and Sit Up.

A horse is taught to lie down or to sit up principally by means of the whip or bridle, as follows: Tap the horse smartly across the shins until he will drop upon his knees. This method, however, requires a good deal of care and judgment, or it will occasion needless pain and punishment before the horse is made to submit. I will give the following method, which, though slower, is better calculated for amateurs:—

Tie the bridle-reins into a knot back of the neck, throw your strap over the back, under the body, and tie to the near foot, below the fetlock. Now pass the right hand well over the back, and take a short hold of the strap. Cause the horse to step toward you, and pull the foot up. Then

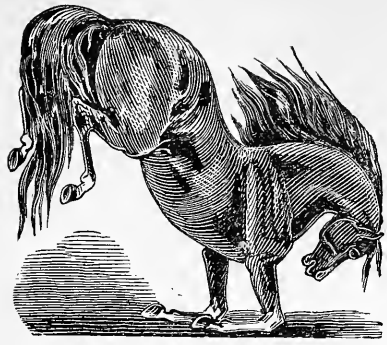


FIG. 231.—Blind Billy kicking up.

pass the left hand around the reins, pull back and down upon them in such a manner as to turn the head a little to the off side, at the same time pulling down steadily but firmly on the strap over the back with the right hand. As the horse goes down, gradually pull the near rein, so as to bring the head to the left, at the same time pressing down and from you firmly with the right, until the horse will lie down. Now pass the end of the strap through the ring of the bit, draw through gently, step over the neck, and as the horse attempts to get up, pull him back, until he lies quiet. Rub and caress him, and after lying a few minutes, say, "Get up, sir!" Repeat in this way a few times, until the horse will lie down readily. Then while holding him on or near the knee with the strap, hit him on the shin of the other with a small whip, until he will bring it under and lie down. After a while he can be made to come on his knees and lie down by simply pulling the head down a little and hitting the leg with the whip, at the same time saying, "Lie down, sir!" repeating until the horse will lie down to the motion of the whip.

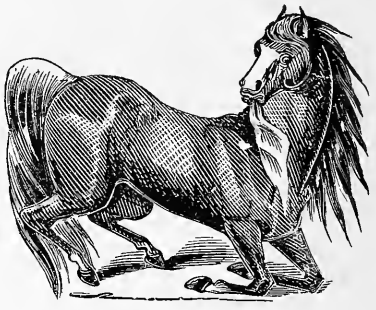


FIG. 232.—Blind Billy walking on his knees.

FIG. 233.—Blind Billy in his great act of walking erect.

To Sit Up.

When the horse will lie down promptly, put on him a common collar, and while down take two pieces of rope, each about ten feet in length, tie the ends around the hind feet, carry them forward between the fore legs, and bring them once around the collar. Now step on his tail, take the bridle-reins in the right hand, while holding the ends

Fig. 234.—Tommy. Sketch from life.

of the ropes firmly in the left. Give a little jerk on the reins, and say, "Get up, sir!" When the horse throws out the forward feet and springs to raise himself on the hind feet, he finds himself unable to complete the effort, on account of the hind feet being tied forward under him, and so brings himself in a sitting position. Instantly step forward, holding the ropes firmly, rub and caress the head and neck a little for a few seconds, then as you see the effort to keep up becoming tiresome, let loose and say, "Get up,

sir!" By repeating in this way a few times, the horse will soon learn to sit up when commanded, without being tied.

To Throw Boys.

To teach a horse to throw boys, first make him kick up as before explained. Then have plenty of straw on the ground, put a boy on his back, and while holding the halter make the horse kick up sharply by pricking, or touching him with the whip. The instant he kicks up, have the boy throw himself forward over the shoulders, for which give

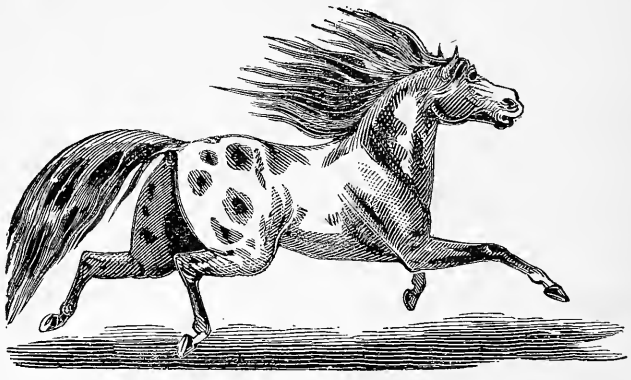


Fig. 235.—Tommy in his vicious act defending the ring.

the horse a caress and a piece of apple. Repeat until he will, at the motion of the whip, make an effort to get the boy off. When he has done this, put on a larger and stronger boy, so that he must make a greater effort to get him off. Watch the point carefully, and see that the boy comes off when the horse makes an effort to throw him, otherwise he will soon become discouraged. By persevering in the treatment, he will soon learn to throw the most expert rider. But it will be noticed that he will make a greater effort sometimes than at others. When he does not seem to work well, put on a poorer rider, and work up again gradually. When the horse makes a particularly good

point, give him apples, and caress him, for encouragement. It is important now to teach the horse to throw his rider only when commanded, or at a signal. To do this, when the boy is on, lead the horse a short distance around the ring, and then signal for him to throw. Repeat in this manner, also letting him go around alone with the boy on his back, until he will go on a sharp trot or run, and throw when commanded.

Fig. 236.—Tommy as the model riding pony.

I trained a pony to throw so expertly that he would at times turn a man or boy over in a double somersault, and bring him down squarely upon his feet. The best throwing pony ever exhibited in this country is admitted to be "Tommy." (See cut 234.) He has been exhibited in all the principal places in the North, and although the best riders, from the bare-back circus-rider to the mustang-trainer on the plains, have tried, no man has ever been able to sit squarely upon his back one minute after the horse was signalled to throw him. His performances in this way have been regarded as wonderful. He will even carry two boys upon his back for a while, and then at the motion of the finger throw them both. This sometimes afforded a good deal of amusement. First, if a boy was in-

Fig. 237.—Tommy in his great act of throwing.

dicated to him as being good, he would allow him to ride as long as he wished, and then to safely slide off behind down to the ground. Then another boy would come who perhaps used tobacco, or had some other vice, when the pony would throw him immediately. Again, if there was a sharp political campaign, a democrat and a republican boy would mount him at the same time, and the one who could ride the longer time could declare his party the victor.

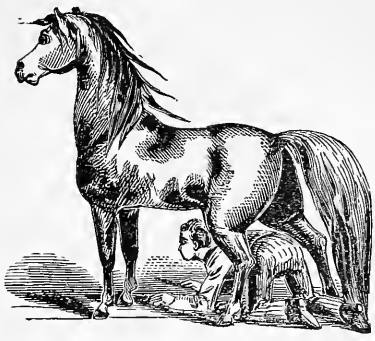


Fig. 238.—Tommy as the gentle pony.

To give something of an idea of the wonderful performances of these ponies, especially the expertness with which Tommy could throw a rider, I give some extracts from the press: –

"Last night a large number of our leading citizens, by special invitation, were present at Prof. Magner's exhibition on Champlain street.

"The first exercise was performed with blind Billy, a pony, stone blind. The pony sat down at a word from his master, and walked upright on his hind legs several times around the ring. A hankerchief was thrown down in the ring, and the pony ordered by his master to find it. After walking around a few minutes, the pony came to a stand and seized the article in its mouth. Several other interesting tricks were performed by this blind pony, but the most laughable scene took place when the spotted wild horse, Tommy, was introduced. He presented every appearance of a wild steed, and ran restively about with distended nostrils and fiery eye, his mane bristling like the quills of a fretful porcupine, but at the approach of his master he became as tame as a lamb. Every one was invited to try their equestrian skill on Tommy, and all who tried were thrown to the ground, tenderly, but in the twinkling of an eye. Mr. Magner offered $100 to any one who would ride Tommy one minute. Several tried, but none were rewarded with success. One ambitious gentleman threw off hat, coat, and vest, and said he 'would be d—d if he didn't ride him.'

Tommy was too much for him. He was thrown several times, and finally concluded that he had better let Tommy have his own way."—*Cleveland Leader.*

"FUN ON THE PARADE.

"The parade yesterday morning presented such a lively scene as has not been witnessed for some time. The occasion was the exercise of some trained horses by Mr. Magner. Straw was plentifully strewn on the ground, and expectation was high while the arrangements were going on. A cordon of boys and men were arranged, a rope placed in their hands, and a ring formed around the straw, into which soon pranced the first animal. This one cut up all sorts of circus capers, the most notable and most heartily applauded feat being the dexterous unseating of a small colored boy, who had the hardihood to allow himself to be placed astride the animal. Next came a totally blind animal, which performed miraculous antics at bidding.

"The last feature was the crowning one. A spotted horse was let into the arena amid the plaudits of the vast assemblage present on the ground, and the Reform Club, which appeared *en masse* at the windows. After various gesticulations by the horse, a challenge was sent to the multitude for some one to mount. A larger darkey essayed the task; but no sooner had he pronounced himself 'ready,' than spotty raised his hindermost legs, lowered his head, and L. D. went careering through the air. 'Golly, boss! dat hoss can't do dat again;' and so up he went again, to be treated the same way, only more so. A fairer complexioned auditor then attempted it, but he was treated in like manner. In fact, it is quite impossible for any one to remain seated when that horse takes a notion to unseat him. The prompt unseating of these two worthies so amused the multitude that Mr. M. thought they had had fun enough for one day, and so announced the show over.

"His class in this city was a large one, numbering over forty members, comprising our leading citizens, all of whom acknowledge the superiority of his system over those of other trainers who have visited this locality.

"His power over untamed horses is said to be marvelous."—*New-London (Conn.) Evening Gazette.*

"A WONDERFUL PERFORMING BLIND HORSE.

"Among Prof. Magner's fine troupe of horses is one that is blind. This beautiful pony—for he is a beauty—is a wonder. He seems to understand every word said to him, and will perform the

most difficult feats with an ease and rapidity that is surprising. He will go to any part of the ring, find and bring a handkerchief, take it from his leg, or any part of his body, go lame, go right or left, back, go ahead, sit down like a dog on either side, squeal like a pig, roll over, walk and kick on his knees, put his ears back and forward, kiss, with many other tricks, showing the greatest intelligence and most skillful training.

"He was not touched with a whip during the whole performance. The Professor simply stood at the center-pole, and talked to him as he would to a boy. He is, without a doubt, the finest and most remarkable performing horse in the world."—*Cleveland Leader.*

"An Exciting Incident.

"Mr. Magner's tent is crowded daily to witness the performances of his wonderful ponies, and attend his lectures. One of these beautiful ponies, among other amusing performances, will throw any one from his back. Yesterday, when Tommy was introduced, a crack circus-rider came forward to ride him for the reward of one hundred dollars. He stated that he came to Buffalo to get the money, as he could ride Tommy, or any other horse, as long as he pleased. At this turn in affairs, a general stir was manifested, which culminated in the most intense excitement. It was proved that no ordinary man could ride the cunning little fellow, as shown by his performances for weeks. But here was a trained athlete, that could turn a somersault on a horse bare-back without being thrown; would it be possible to throw him? There were serious apprehensions that he could not. Mr. Magner stood silent a moment, with the reserve characteristic of him, contemplating the intruder, as if to say, You may, perhaps, do it, but not if I can prevent it; while the other stood with folded arms, showing the most perfect confidence in himself.

"It was a scene worthy the brush of a painter. The immense throng present were hushed into silence, waiting for the contest. A signal brought Tommy upon a run. The whip was passed around his nose quietly, when the athlete was invited to come forward, who, disdaining help, lightly bounded upon the pony's back; but before he had time to say Jack Robinson, Tommy commenced a series of gyrations that would astonish an Indian, and sent his man fully six feet into the air. It was beautifully and grandly accomplished; but would he, could he, do it again?

"The trial was made, and, as before, the pony went into the air with the quickness of lightning, and, after a little more prolonged effort, sent his man heavily to the ground. But the contest was not yet over. All the desperation that pride and confi-

dence could excite seemed to be now called into the actions of the man for a final test. He mounted more carefully, and, with a grasp of iron, awaited the onset. It soon came; for Tommy, seeming to be now conscious of the task upon him, twisted and turned and jumped as if a demon, his eyes flashing fire, until, with a tremendous bound, he sent the man high in the air from his back, this time fully vanquished. It was a grand performance. Many, with feelings of intense admiration, crowded forward to caress the noble little fellow, while Mr. Magner seemed as proud of his pet as if he had won a kingdom. It was the finest and most exciting exhibition we ever witnessed."—*Buffalo (N. Y.) Courier.*

To Walk upon his Hind Feet.

To teach a horse to walk upon his hind feet, put on the First Form of War Bridle, and while holding a short whip in the right hand, with the left give little sharp jerks upon the cord, which will throw the head up. At each inclination to do this, touch him under the jaw with the whip, and encourage until he will raise the fore feet from the ground and stand straight. When he learns to stand up, step forward of him a little, and ask him to come. If he tries to come down, touch him sharply under the jaw to keep him up, and repeat until he makes an effort to walk in this position, for which caress and reward. A lesson should not be continued longer than a few minutes, and at first should not be repeated more than twice a day. By perseverance in this way, a horse will soon learn when he gets up to balance himself, and take two or three steps forward.

This is a trick some horses cannot be made to do, because they have not strength enough in the loins and hind legs to get up and walk. "Blind Billy" is wonderfully strong in this respect. He frequently walked twice around a thirty-four-foot ring without coming down, and without being touched. This was the greatest performance of the kind I ever knew, but the secret of it was the strength of

his back and quarters. One of the most interesting tricks that "Blind Billy" does is squealing at command. He first squealed by chance, when he was put in the same position again, and made to repeat it. The same is true of "Gifford's" groaning. He first groaned by chance, and was then made to do it afterward.

To Walk upon his Knees.

To teach a horse to walk upon his knees, first teach him with a whip to go down upon his knees, then pull him ahead

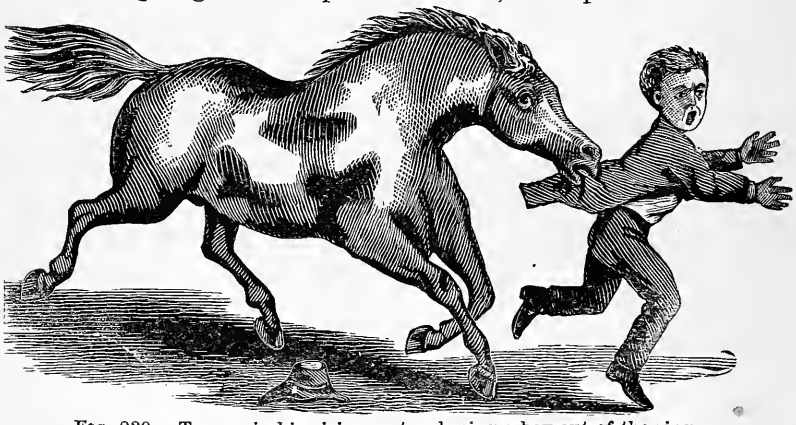


Fig. 239.—Tommy in his vicious act—chasing a boy out of the ring.

a little by the halter, until he will make an effort to walk in this position. At first he will make an effort to get up, but he must be forced back again until he learns to keep down and make an effort to come ahead. There should be plenty of soft sod or straw on the ground to prevent hurting the knees. It requires patience to teach this trick, but once started, the horse will soon learn to walk as far as desired.

To Chase a Man out of the Ring.

To teach a horse to chase a man out of the ring, train him first with a whip, then step away from him a little,

and make him follow, for which reward him. When he will chase you across the ring, turn short around and face him. He is now to come straight up to you without biting; but so long as you run from him, he is to run after you. The proper course is to run out under the ropes, and when he follows you, reward him. An intelligent pony will learn to do this very quickly.

Driving without Reins.

Twenty years ago, driving a horse without reins was

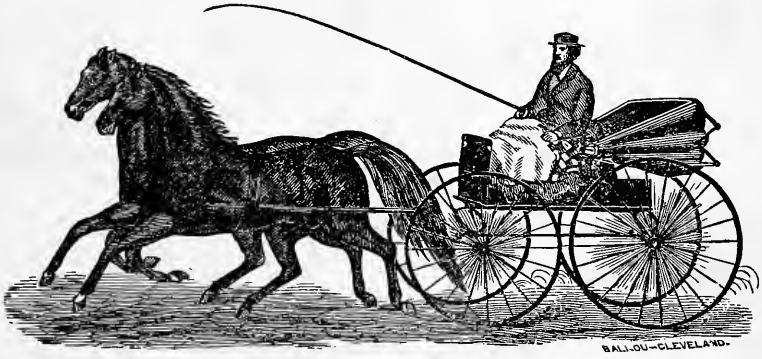


Fig. 240.—Turco and Gifford, as driven without reins.

regarded as one of the most interesting feats of training ever exhibited. People would come from all parts of the country, often as far as twenty miles, to see a spirited stallion driven to a carriage without bridle or reins,—turning, stopping, backing, driving fast or slow, etc., by the motion and control of a whip. Yet it is one of the most simple feats of training imaginable. The idea of this method of training after a time becoming quite generally known, so many common horses were trained in this way it soon lost its novelty. It is, however, so interesting a feature that I will give the full details of its management:—

First, put on an open bridle, with the reins resting

loosely upon the neck. Provide yourself with a straight buggy whip having a straight or bow top. Stand opposite the back, grasp the rein just short enough to take up the slack, but not tight enough to pull on the head. Now with the whip commence tapping lightly about at the center of the off shoulder, when the horse will bring his head around a little to avoid the annoyance. By pulling now slightly upon the rein, he will step around to the right, when caress him and give an apple, etc., and so repeat until he will step around promptly when touched with a whip. Now go around opposite the hip, holding the rein moderately tight, and touch the shoulder, as before, with the whip. When he steps around, caress. So repeat until he will come around promptly at the motion of the whip alone. Next, go to the opposite side, and so repeat until he will step around in either direction desired.

The next step is to teach him to stop at the motion of the whip. With the horse in a corner well up against the wall, stand on the near side well back toward the hip, and bring the whip gently up on the back of the head, so that the lash will reach over upon the fore head. Tap lightly at first, then a little harder until he will step back a little, for which instantly caress, and repeat until he will go back promptly.

It will be necessary now to provide a whip sufficiently long that while standing at the hip or tail, it will reach the head, so that in moving, when the whip is raised, the horse will instantly stop. If he does not, he can be hit sharply to compel him to do so. Repeat in this way until he can be stopped or forced back under any excitement.

The next step is to turn him right and left as if driving with reins. To do this, grasp the tail with one hand, and with the other bring the whip to the shoulder again, and tap it as before until he will step around. When he is about

half way around, bring the whip to the opposite shoulder, striking him sharply until he will turn in that direction. Simply repeat until he will turn in any direction desired.

Now get in, and let the reins extend back under you upon the seat, but so loosely that they will not bring any restraint upon the head. Catch the foot-strap so that you can pull the foot up at will. Now repeat the lesson of stopping, and starting, and turning either way, until he is prompt in his obedience. In the meantime should he try to go ahead, pulling the foot up will stop him. The reins are on as a matter of convenience, so they can be used when necessary. I prefer, however, to give the head perfect freedom, and depend upon the foot-strap for safety. In my practice of training a horse to drive in this way, I repeat the lesson of stopping, etc., a hundred times over, until I feel sure the horse is perfectly safe to drive with the whip.

After horses are trained to drive single, they can then be put together, and with a very little practice they will drive equally as well double.

CHAPTER XII.

EQUESTRIANISM.*

THAT there is no exercise to be compared with horse-back riding is conceded by all well-read physicians, as well as by all ladies and gentlemen who have given it a test. One has only to look at a person returning from a ride on the saddle to see at once the beneficial result. The tinge on the cheek, and ruddy glow on the whole face and neck, is a positive assurance of the fact. It will prove a sure cure for dyspepsia in its worst form, if one will but persevere in the delightful recreation. But some one will say, "Oh, I cannot ride horse-back; it is too violent an exercise." And why? Simply because

FIG. 241.—Horseback Riding.

* By request of the writer, this paper was furnished by J. W. Robinson, Esq., of Portland, Me., a practical teacher of Esquestrianism of many years experience.

the attempt is made without any knowledge of the art, if it may be so called. The fundamental principle of the art of learning to ride is to learn one thing at a time, and learn to do that well, before attempting to do anything else. The first thing to learn is how to sit upon a horse. One should become perfectly at home in a saddle upon a constantly moving horse, so that whether it walks, trots, canters, shies, or jumps, he will either not lose, or will immediately regain, his position. The proper seat is a firm one in the saddle, with the legs below the knee free, and the body above the waist supple and pliable. Whatever movement the horse makes, whether to the right or left, or tipping backward or forward, the hips must conform to it, while the legs from the knees downward are free to obey the rider's will, and the upper part of the body retains its balance by accommodating itself instinctively to every movement. If the upper part of the body be kept rigid, its effect will be to remove the hips from their place in the saddle. If, on the other hand, it be flexible, it will yield and sway with every movement, and will be left free to obey the motions of the saddle.

In Tommy's act of throwing the boys, described in another chapter, whenever a boy or young man would sit in the saddle rigidly, with a firm grasp of the mane, no matter how strong or supple he might be, the pony would throw him with great ease, and with the force of a bullet, from his back; but when a young man came in who would sit and balance himself on the pony's back as if with the greatest carelessness, harmonizing the motions of his body freely with those of the pony in the attempt to throw him,

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was not quite so full in detail on some points as was thought necessary, the author has taken the liberty, not being himself a practical equestrian, to appropriate and insert instructions from the best modern authorities, being especially indebted to a series of papers written by Col. Geo. E. Warring, and published in the *American Agriculturist.*

it would frequently require the greatest effort to dislodge the rider.

The position assumed in the saddle should be with the weight of the body supported directly under the hips, the spine curved inward, and the head and chest thrown backward. We give two illustrations from Leach, showing the insecure and the secure position in riding. The rider in

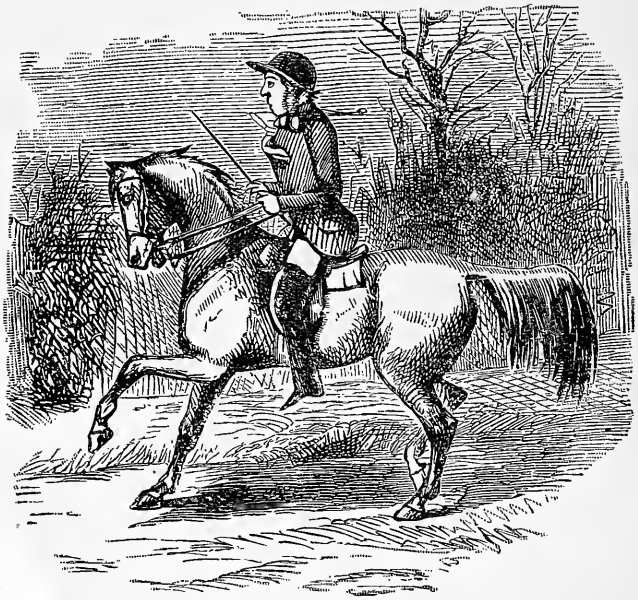

Fig. 242.—An insecure position.

the first illustration exhibits the greatest caution and timidity, with his body bent forward, and his whole attitude one of rigidity. The second illustrates the freedom with which the body may be managed when the seat is secure. When a landsman first goes to sea, he finds it extremely difficult to adapt himself to the motions of the vessel, stumbling and falling like a child learning to walk; but with practice he soon gets what is termed his "sea-legs." The principle is the same in learning to adjust one's self to the motions of the horse in riding.

The learner should make no attempt to guide or manage his horse, nor even trouble himself how to mount and dismount. Let him get into the saddle, turn his toes inward, press his knees against the saddle, but not his calves, bringing the flat of the thighs in the largest contact with it. Curve the spine inward, and throw the shoulders back.

FIG. 243.—A secure seat.

Let the arms hang listlessly by the side. Holding mainly by the knees, shift the seat from side to side and from front to rear, with as little swaying as possible of the upper part of the body. Continue this practice, no matter how long it takes, until the seat is firm, and the learner can move in any direction while keeping the spine curved inward. When the rider has accustomed himself to the slow

motion of a walk, let the speed be increased, until finally the horse is galloped with a long bridle rein, under all his motions, and the rider feels comfortable and easy, and has learned to depend only on his thighs and the flexibility of the body to maintain his position.

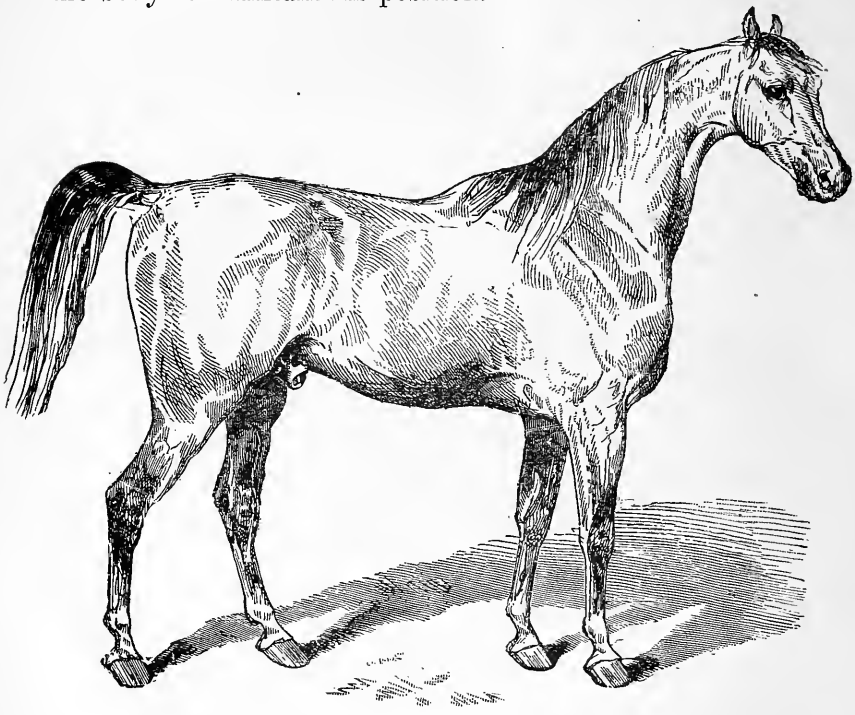

Fig. 244.—A good model of riding-horse.

Having perfectly accustomed himself to the seat, the pupil may now put his feet in the stirrups, and learn their use. They should be used as a matter of comfort and convenience, as it is fatiguing to ride with the legs dangling at the horse's side. In walking, a gentle support of the stirrups keeps the body from swaying from side to side as the horse moves. In trotting,—when stirrups are almost indispensable,—they permit the horseman to either "rise to

the trot," or to distribute the shock in "riding hard" between the feet, the seat, and the thighs, so that it is no longer a shock, but becomes a quick, easy movement. The stirrup leathers should be so adjusted that the iron will just touch the bottom of the feet, giving them support without raising their position, while the inner part of the thighs, as far down as the knees, are pressing firmly and immovably against the saddle, and the legs below the knees hanging vertically.

In ordinary riding it is best to have the ball of the foot touch the stirrups, as the play of the ankle-joint gives more elasticity to the support. But in galloping or leaping it is best to "drive the feet home," and carry the stirrups in the hollow of the foot. We consider the wooden stirrup in common use in this country to be the safest and best.

The main office of the stirrups is to rest the legs, while at the same time they assist in maintaining a proper position. But in case of any sudden start, the knees and thighs should be at once performing their duty of grasping the saddle. They cannot do this if the weight is thrown too much upon the feet. It is also important to learn how to stand in the stirrups while the horse is in motion, turning so as to look to the rear, to throw the weight first on one foot and then on the other, and to assume every possible position rapidly and easily; for all this adds to security, freedom, and grace in the seat.

The following is the correct manner of mounting by the aid of the stirrups: First, take the reins in your left hand just over the horse's withers. Stand with your right side to the horse, not too near, and put the left foot in the stirrup. Grasp the horse's mane with the rein hand, the pommel of the saddle with the other, give a spring with the right foot and vault into the saddle, throwing the leg back and over the horse. Now rest the ball of the feet in the

stirrup, and close the knees against the horse to keep a firm seat while trotting fast.

It is impossible to ride really well on an average horse without a curb bit; but it is impossible to ride well on any horse unless the curb bit is properly made and properly adjusted. And no one can either ride with pleasure or become really a good horseman on a horse that is in constant pain from an ill-fitting bit.

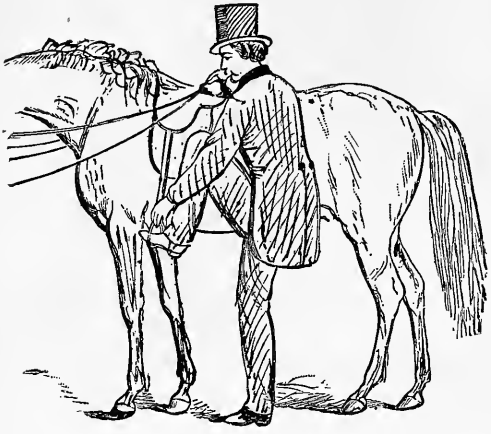

Fig. 245.—Position in mounting.

The beginner should use the reins of the snaffle only, grasping a rein in each hand at a length that will give him command of the horse. The proper manner of holding the reins, is, however, in the left hand, the curb reins divided

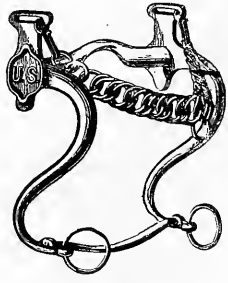

Fig. 246.—Army Bit.

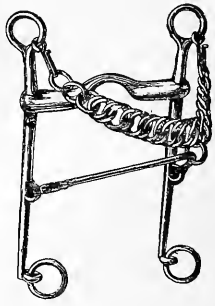

Fig. 247.—Ordinary Bit.

by the little finger, the snaffle reins divided by the middle finger, the ends of both sets carried up through the hand and secured by the thumb, which should be uppermost,

and pointed to the ears of the horse. By bending the wrist to the right, so that the knuckles come uppermost, the horse is turned to the right. By bending the wrist to the left, so that the finger-nails come uppermost, the horse will be turned to the left. There should never be tension on the two bits at the same time. The horse should be ridden upon the curb; the snaffle should be used to fix the height of its head, and occasionally to take the place of the curb to freshen the mouth.

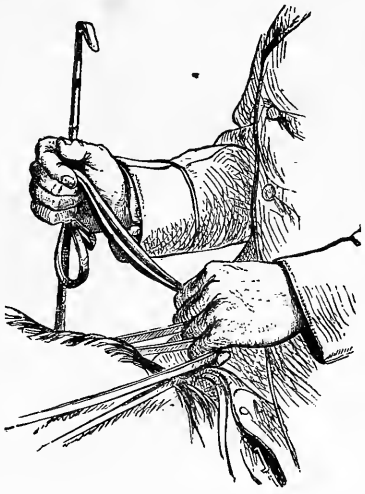

FIG. 248.—Holding the reins.

Particular attention should be given to having the saddle adapted to the size of the person who is to use it. If it is too large for the rider, it will not only give him discomfort, but will increase the difficulty of acquiring a seat.

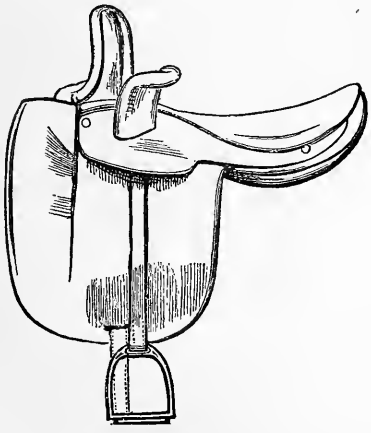

FIG. 249.—Ordinary side-saddle.

Invalids, or those not accustomed to horseback riding, should select a horse that is gentle and fearless, easily managed, sure-footed, and elastic in action. A riding-horse should not be used in harness, as this soon destroys the elasticity and smoothness of action necessary for easy riding. If the horse is at all vicious and unmanageable, he should be subjected to such treatment (as

explained under that head) as will insure his entire docility and easy management. This is particularly necessary before attempting to ride him in the street.

Much of the foregoing instruction will apply to ladies learning to ride horseback. The lady should so sit upon the horse that her weight will fall perpendicularly to the

Fig. 250.—Position in the saddle

back of the horse, her face directly to the front, her shoulders drawn back, and her elbows held to her sides. She will permit her body, from the hips upward, to bend with the motions of the horse, in order that she may preserve her balance. The right knee will hold the upright horn close in the bend of the knee. The left foot will be thrust into the stirrup to the ball of the foot, and the heel will, as a rule, be carried down. But when the heel is elevated, the upper part of the left knee should find support in the

side horn, and for that end the stirrup leather should be given such a length as will permit this. A lady should never be mounted on a weak or stumbling horse.

The reins are to be held in the left hand, as already described, and in a line with the elbow. The whip should be carried in the right hand, with the point toward the

Fig. 251.—Good position.

ground. It takes the place of the right leg of the man, and the horse should be trained to answer to its application in exactly the same way as to the pressure of the man's leg. The horse should never be struck with the whip upon the head, neck, or shoulders, as such whipping will render him nervous, and may cause him to swerve.

It does not come within the limits of an abbreviated article of this character to give the details for the training of a horse to the different gaits and tricks of which he is

capable under the saddle, as there are a great variety of works imparting this knowledge in full, which are easily accessible by those who desire it. With these suggestions, and sufficient practice, any one may enjoy this the best of all modes of exercise.

If people would generally adopt horseback riding, they would starve out half of our doctors, and would live in the enjoyment of much better health than they now do. I will give here one of the many cases of restoration to health from this exercise that have come under my notice: A lady (whose name I will omit) came into my riding-park in a hack from her home about a mile distant. I arranged a stand so that she could step upon it, and sit down in the saddle without any effort. I led the horse around at a walking pace for about twenty minutes, when she dismounted quite exhausted, and was taken home. The next day she came again in the carriage and took another short lesson, and so continued to do three or four times a week for about four months. During this time she gained in strength to such an extent that at the expiration of the time she rode by car to Boston, a distance of twenty-five miles, did some shopping, thence to Cambridge to dine with her mother, and then returned home and rode ten miles on horseback. At the end of her ride she said to me, "I feel no more fatigued than I did this morning when I started for Boston."

This is only one of the many cases that have come under my observation of regaining health from this exercise. Let every one have good practical training if possible, but get the exercise at all events, if you cannot have the training.

In corroboration of what Mr. Robinson says on the beneficial effects of horseback riding, I copy the following paragraphs from a valuable little work on "Horseback Riding from a Medical Standpoint," by Dr. Durant, of New York:—

"Horseback riding, as we have seen, is one of the most energetic modifiers of the circulation; it distributes the blood equally to every part of the capillary net-work, giving to each part its due proportion, by maintaining a due tension in every part by equalizing the temperature; it prevents equally anæmia and hyperæmia, and sanguineous stagnation, by the impulsion which it gives to the circulatory phenomena, and aids nutrition by the acceleration of the respiratory and digestive phenomena. It is by its effect upon the reactions of the blood to the nervous system that horseback riding produces such a happy influence.

"The effect of horseback riding upon the functions of the system, is especially remarkable upon that of digestion. It stimulates the appetite, excites and perfects digestion, favors absorption—in fact, to use a trivial expression, 'it makes the bits go down.' These are not the only results of the new energy imparted to the functions which we have studied, all of which concur in the accomplishment of this special one; it exercises a special influence upon the muscular fibre of the coats of the stomach and the intestines. These viscera may be considered as fairly suspended in the abdominal cavity, where they are barely held and limited in their movements by the folds of the peritoneum. Each shock from the horse shakes them and makes them roll, as it were, upon each other, and causes the changes in the relations of the convolutions of the intestines. These shocks and knocks and rubbings act as a mechanical excitant upon the muscular fibre, which in consequence contracts with more energy, preserving, however, the peculiar character of the fibre-cells; that is, of contracting slowly and successively; the action of the fibre being increased and the peristaltic contractions acquiring more power, there results from it a more intimate mixture of the juices and aliments in the stomach, a more perfect chymification of the food, and a more prompt and complete absorption of matters already digested; and, lastly, all those which have as yet escaped the process are brought into the portions of the intestines where their metamorphosis is effected."

CHAPTER XIII.

SUBJECTION.

In this chapter I wish to embody explanations which I could not well give in other parts; it may also be considered as a continuation of the first chapter.

The first account I find of any one taming a horse is

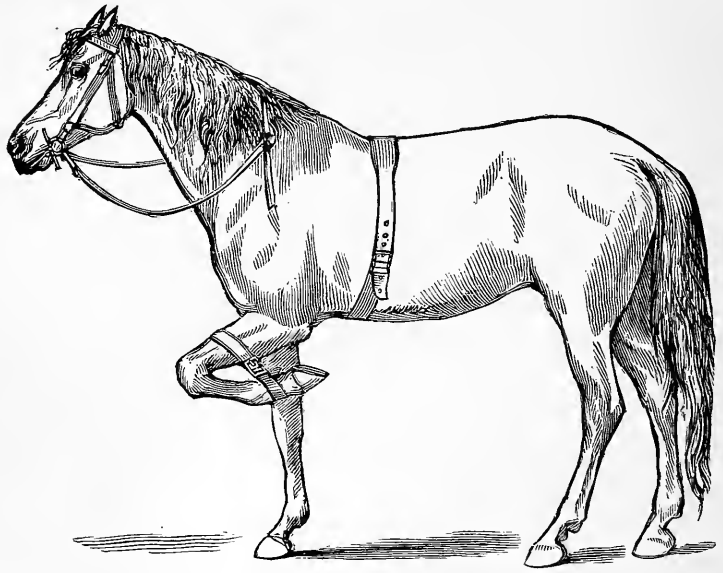

Fig. 252.—The leg tied up, and surcingle on.

that of Alexander the Great, when a boy of seventeen, taming Bucephalus. The story, as recorded, is as follows: A horse was offered for sale to Philip of Macedon, who, perceiving he was unmanageable, ordered him to be taken

out of camp. Young Alexander, observing that the horse was simply frightened by his shadow, took him by the head and moved him about so that he could not see it, jumped upon his back and let him run. The whole camp was alarmed for the safety of the young prince borne off on the furious horse. But nothing could be done, as the horse soon distanced all pursuers; and when, a short time afterward, Alexander rode into camp entirely unharmed, with the horse gentle and manageable, the surprise and gratification of all were great. The horse had simply been allowed to run until exhausted, when he became manageable. The same method of subjection, with some slight variations, is still practiced by the people of South America, and by the Indians of our Western Plains. On the pampas the horse is caught with a lasso, thrown to the ground, his head covered with a blanket, when a bridle with a powerful bit and a saddle are put on. He is then mounted, the blanket pulled off, and the horse in his fear runs or bucks until exhausted, in his endeavor to throw his rider. He is then turned about and ridden into camp, the hair of his tail squared off to indicate that he is broken, and he is again turned loose.

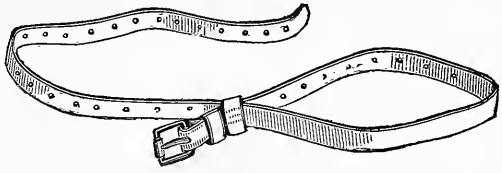

FIG. 253.—The Leg-strap.

The Indians of our Western plains catch the horse with a lasso, and with a small hair or raw-hide rope form a noose around the lower jaw for a bridle, mount, and let the horse run until exhausted. Cold-blooded horses may be subdued with considerable success by this means, but those of a warm-blooded, courageous nature, if given freedom to run in this way, would be liable to go until they dropped dead,

or until the constitution was so seriously injured as to ruin them.

Any method of lowering the vitality will make a horse gentle, such as physicking, bleeding, tying down, depriving of water, food, sleep, subjecting to intense pain, etc., which can be carried to any extent desired; but the trouble is that when the horse regains his strength, or recovers from the

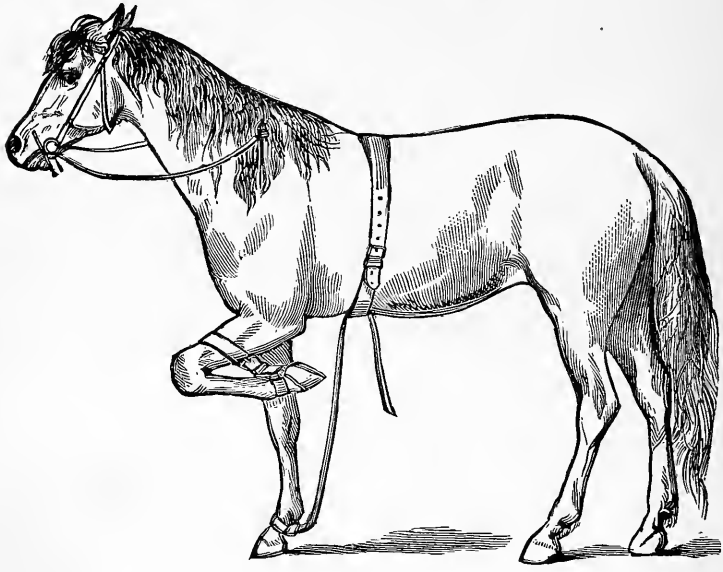

FIG. 254.—The horse ready to be thrown.

effects of the pain, he is liable to become as bad as before.

By disabling any part of the body, there will be produced a corresponding sense of helplessness and submission. For example, tying one ear down or twisting it is regarded by many as quite a secret to make a horse stand to be shod. It is quite a trick among many jockeys, in driving a kicker, to tie the tail to the crosspiece, or forward by a string to the belly-band, having discovered that a horse will not kick if the tail is disabled or cannot be raised. It is on this

principle that many headstrong horses can be driven gentle by checking the head high. A man named

DICK CHRISTIAN,

who had considerable notoriety as a horse-tamer in England nearly one hundred years ago, based his whole success in the management of horses upon tying up the fore leg, when he would mount and ride the horse until gentle. Disabling, or tying up both fore legs, and throwing the horse down, carried this principle to still greater perfection. The first published account I find of this method of subjugation being practiced was by a man named

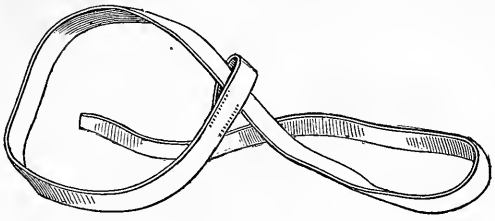

FIG. 255.—The Foot-strap used.

BULL,

who lived in Stanton-le-Vale, Lincolnshire, England. This man had quite a local reputation for his power over horses. A correspondent of "Bell's Life," published in London, who gave Bull one guinea to teach him the secret, described his method as follows:—

First, buckle a surcingle around the body; second, tie up the fore leg by buckling a strap tightly around the foot and fore-arm; next, attach a strap to the off fore foot, bring it over the horse's back, and grasp it firmly with the right hand. With the left, catch the near rein of the bridle, and pull the head around toward you. When the horse is made to step, pull the foot from under him, bringing him on his knees, when in a short time he will lie down; this was the whole secret. In the account, the correspondent referred to Bull's control of several horses, making them lie down, get up, etc., at command.

We also learn that about the year 1800 a man named

JUMPER,

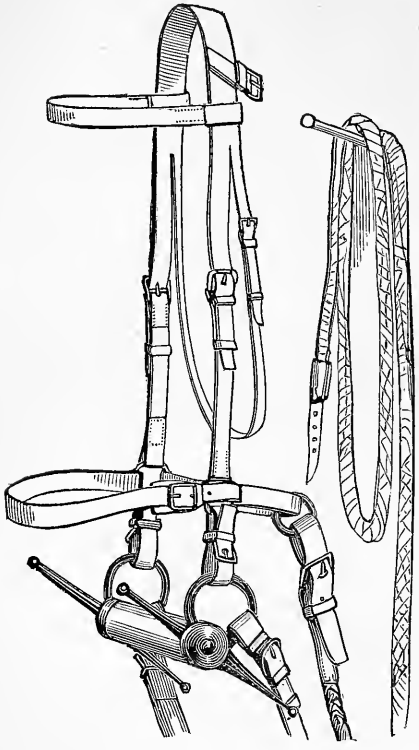

Fig. 256.—The Bridle used to prevent biting.

in Yorkshire, England, was quite celebrated for his power over horses, although he kept his method a great secret. The following account shows that his method was the same as Bull's: A correspondent in the *Veterinarian*, named Castly, in referring to a certain horse given Jumper to break, says that in ten days he brought him home perfectly subdued, *for he would lie down, and rise again, at his command.*

About the same time a man named Sullivan, better known as

THE IRISH "WHISPERER,"

who lived in Mallow, in the County of Cork, Ireland, had quite a local reputation for his power over horses. His method of management was to shut himself up in a building with the horse to be subdued, until he had him under control, when he would open the doors and exhibit the effects of his treatment. While the horse was standing quietly, he would occasionally put his mouth to the horse's ear as if whispering something to him; hence the term

"Whisperer" Sullivan. Many people, even of intelligence, supposed that Sullivan's control was supernatural. Though an ignorant man of the lowest class, and addicted to drinking, he was evidently a shrewd fellow in making the most of his secret. It is stated as a fact that the parish priest, whenever he saw Sullivan coming toward him in the street, believing he was in league with the devil, would cross him-

FIG. 257.—As the horse is liable to rear and plunge, in his resistance to being thrown.

self and take the opposite side, to protect himself from his supposed satanic influence.

Sullivan would not reveal his secret, but there is no doubt but that his method of treatment was the same as that practiced by Jumper and Bull. When exposed to the public, the horse was always sweaty, and exhibited the general effects of exhaustion usually produced by this method of treatment. According to report, he claimed to have ob-

tained the secret from a soldier who had been in service in America, in return for treating him to a gallon of porter.

The first man in this country of whom I have any account, claiming to have the secret of taming horses, was one named

DENTON OFFUTT,

who traveled in the Southwest. But it was admitted that circus men understood and used it long before his time. He seems to have kept his knowledge a secret; for we find that but very few obtained it of him, and those only at very large prices.

The next was

O. H. P. FANCHER,

formerly of New London, Ohio. He claims to have traveled, when young, through Mexico and Texas, and to have lived for some time among the Comanchee Indians. I do not know positively whether he learned the secret of Offutt, but I so inferred. At least, he practiced the method prior to 1844, when he was quite a young man, as will be shown hereafter. But no great stir was made by any one in this field of effort until the advent of

JOHN S. RAREY,

in England, in 1858. Rarey was the son of a country hotel-keeper in Central Ohio, at a place called Groveport. When of age, he went to Texas, and on his return traveled as a horse-tamer. Finally, arriving at Toronto, Canada, a gentleman named R. A. Goodenough, an American banker and produce broker, who carried on a large stock-breeding farm, became interested in his mode of treatment, and took him to England for the purpose of teaching the system.

There were several circumstances which seemed to give him immediate notoriety: 1. His being permitted to give an exhibition before the queen and royal family; 2. His

bold pretensions to being able to know a horse's every thought, and to subdue any horse or animal in the world. In proof of these claims, he subdued Cruiser so that he could handle him with safety before the public. This horse was said to be so vicious that an iron muzzle was kept on him, and he was shut up in a building built especially for him.

He next subdued a horse called the Stafford Stallion, owned by the emperor of France, so that he was driven in the streets of Paris for two weeks by the side of a mare.

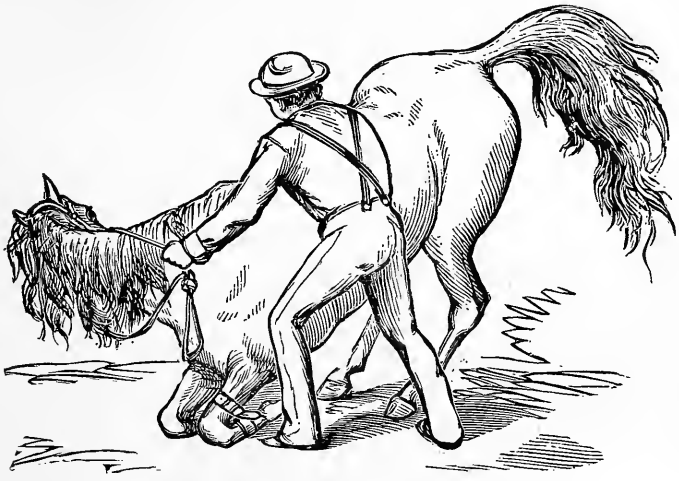

FIG. 258.—Usual position before being thrown.

This horse was so vicious that he had killed three men, and had been kept confined in a building for two years. A still more surprising feat was the subjection of a zebra from the zoölogical gardens of London.

So great was the interest excited among all classes in England by this apparent success, that two thousand subscribers were obtained to learn the secret, at $50 each. But when he came to reveal his method, it was found, or claimed, to be based wholly upon disabling and throwing the horse, the same as Bull's method, excepting that instead of bringing the strap which was attached to the off

fore leg, over the back, it was brought under the body, over the surcingle. (See cut 254.) The horse was then brought upon his knees, and held there until he would lie down, when he was handled and caressed until reconciled to the restraint and submissive to control.

This treatment was so simple, and the change produced in so short a time seemed so remarkable, that it was surprising, as there was no idea at that time that a horse could be

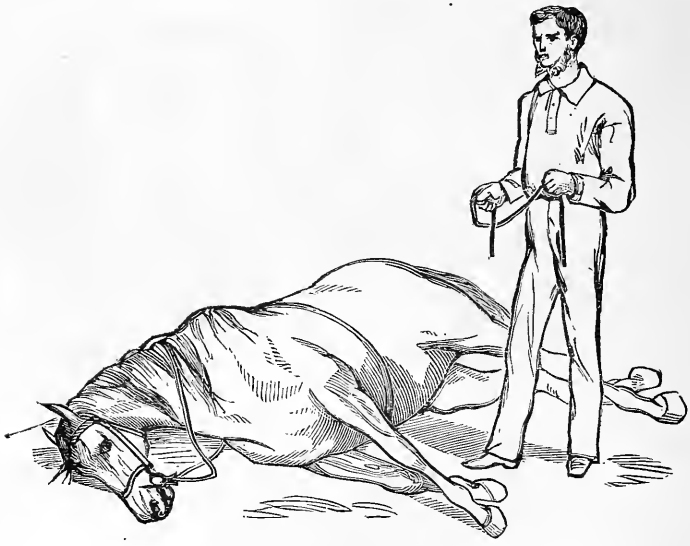

Fig. 259.—The horse subdued.

so acted upon directly as to change his character. What little knowledge there was on the subject was possessed by but few, who kept it a great secret. The submission was all that could be desired, so far as the lying down and handling afterward while on his feet was concerned, but was not by any means sufficient in the management of bad cases (which was not explained) to hold him submissive afterward in other positions. (See first chapter, "First Method of Subjection," also the close of this paper.)

But over against these achievements were the unpleas-

ant facts that the cases upon which he claimed his reputation, out of his hands became again as vicious as before, and that Cruiser, for this reason, was finally presented to him by the owner. In showing him in this country, as an evidence of his previously bad character, Rarey exhibited the big iron muzzle which he claimed the horse had worn before

Fig. 260.—The first step in the improved method of throwing.

being subdued by him. I include here illustrations of the treatment, which, with the explanation given of it in the reference to Bull, will make it sufficiently clear to the reader.

Notwithstanding the method was well known and taught in this country before his return, there was great curiosity among all classes to see Mr. Rarey himself illustrate the treatment; yet in spite of the most thorough and oft-repeated trials by himself and others, there was failure to give the satisfactory results claimed and expected.

Although I could explain the mystery of his success in a few paragraphs, yet in consequence of the great misconception in regard to it, and to the merits of his claims, I consider it necessary to give my reasons for doubting their genuineness, as well as the way I was finally able to obtain the facts.

There were several points which to me would not seem to bear close investigation: First, if this treatment enabled Mr. Rarey to perform the feats claimed in Europe, why would it not, upon thorough trial by himself and others, produce the same results here upon horses only moderately vicious? Second, Cruiser and the other cases referred to, out of his hands became again entirely unmanageable. How was it that he could control such horses, while others, using the same treatment, utterly failed upon them? These were questions which puzzled and misled the public, making them believe, as the only reasonable explanation, that Rarey had a magnetic or psychological power over horses that others did not possess, and which enabled him to control them as he wished; or that he gave them drugs, or something that gave him power to control them for the time. Another fact: Before going to Europe he made no especial reputation as a horse-tamer,* and after dissolving partnership with Mr. Goodenough in England, or after his return to this country, he made no special stir, nor did he make the improvements to be reasonably expected from a man capable of the resources and skill necessary to attain the success with which he had been credited. He simply repeated the same method of treatment, depending mainly upon the prestige of his European reputation for enlisting attention here. It also came out after his return from

* During my early professional career, I traveled over much country that had been visited by Rarey previous to his going to Europe, especially in Southern Pennsylvania, and frequently heard of him. All the statements concerning him substantially agreed in the fact that he traveled alone from town to town, with but very indifferent success.

Europe, that he learned the secret of Offutt,* from the fact that Offutt sued him for revealing it, claiming large damages, at first getting judgment, but upon being carried to a higher court, the judgment was reversed.

In talking with Mr. Fancher about Mr. Rarey's claims, as proof that he did not originate the system, he brought

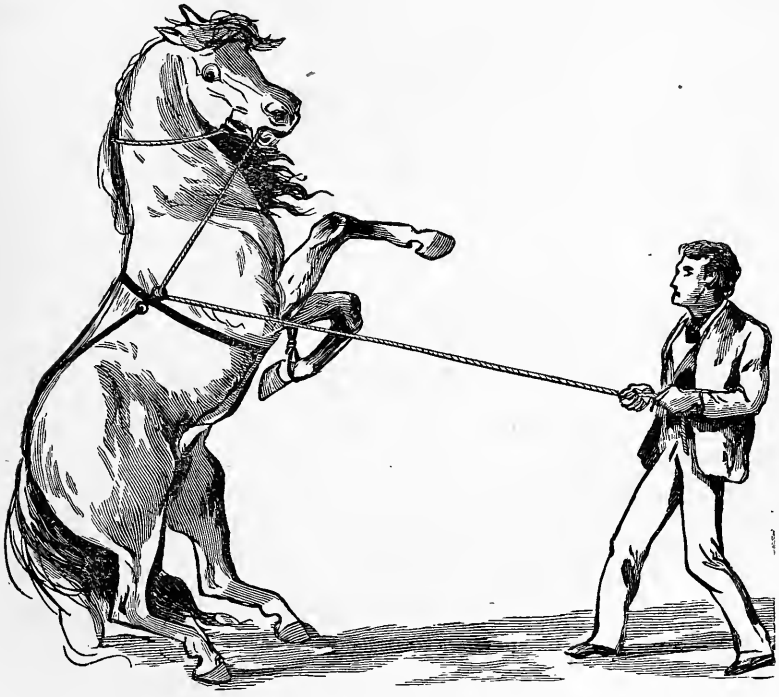

FIG. 261 —The second step in the improved method of throwing. Objectionable from danger of pulling the horse over backward, &c.. Details explained farther on. See page 506 in Personal Experience.

forward indorsements from Henry Clay, Daniel Webster, and other men of national reputation, showing that he (Fancher) practiced the same method as early as 1844, which was long before Rarey was known.

I had tried the treatment upon all sorts of horses, and had studied with close attention the effect it would produce upon horses of different temperaments and habits. While

* See note on page 384.

it would insure considerable success in the control of some horses, it would utterly fail upon others. I was led to believe that possibly there might be some secret about the treatment that I did not understand. To satisfy myself upon this point, I had a great desire to see Mr. Rarey himself explain and illustrate it. This I was finally able to do in Pittsburg, Pa., in the early summer of 1865, when he gave a series of exhibitions there. I exhibited there

Fig. 262.—The method as now used, giving all the power desired to throw any horse with ease, and without danger.

the week before, and remained over to see him. His application of treatment was precisely what I had long understood and practiced.

I next desired to see Cruiser, and study the peculiarities of his disposition. In 1868, when in Columbus, Ohio, and neighboring towns, I had an opportunity of submitting several of his colts to treatment. Two of them were considered entirely unmanageable, having resisted all efforts to

break them. One, an eight-year-old colt, belonging to Squire West, of Reynoldsburg, Ohio (a point twelve miles south of Columbus, on the pike), was especially vicious. This colt submitted to my treatment perfectly in less than an hour.

I now went to Groveport to see Cruiser, and spent two hours studying him as he stood in his paddock. I found him a medium-sized, fine-grained horse. His head was well proportioned, wide and full between the eyes, which, though not large, were well set out on his head. The eyelids were thin, and the distance from eyes to ears noticeably short.

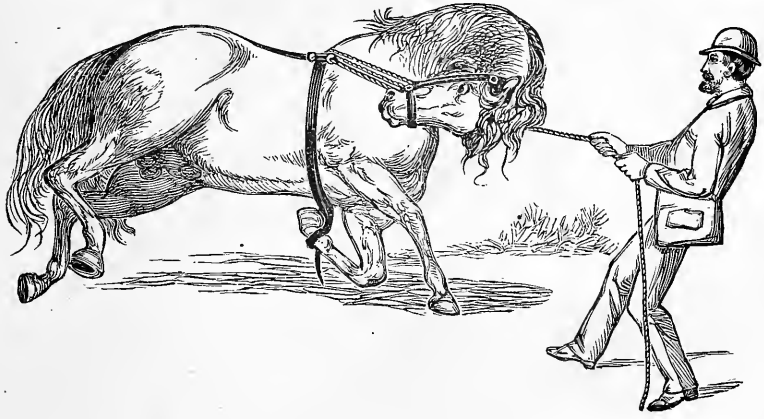

Fig. 263.—As the horse usually falls by this method.

The ears were exceedingly fine, short, and pointed, and set close together, indicating, like the other parts, great sensibility and courage, and, if excited, great capacity for prolonged resistance. (I give a sketch of his head, drawn under my direction from memory, by J. C. Beard of New York. It is not exactly the impression I had in my mind, but it is as near it as the eminent artist could catch from my description.) Though susceptible of being easily managed when subjected to proper treatment, such a horse I knew I could not make gentle and hold him so by the treatment claimed to have been practiced upon him. And when

I took into consideration the character of the Stafford horse in France, which I knew to be that of a savage, bull-dog nature, and which would not by any means be amenable to such a method of treatment, also that of the zebra, a far more difficult nature to subdue, I was fully convinced that they never were controlled by the method of treatment claimed to have been practiced upon them. Also at this time and later I made careful inquiry in the neighboring towns in relation to Rarey, but could obtain no facts show-

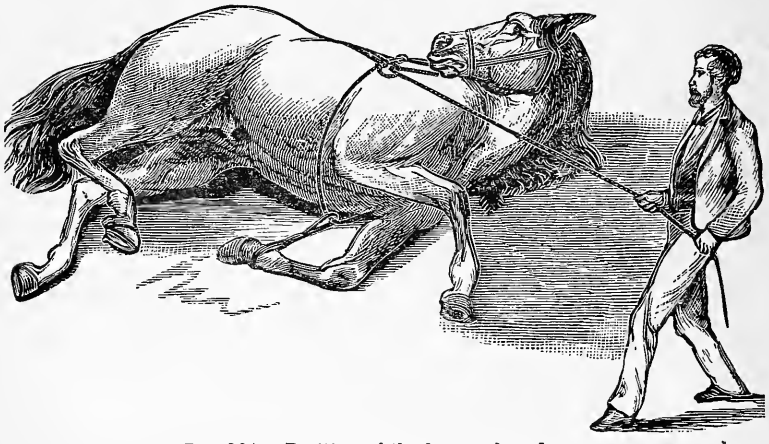

FIG. 264.—Position of the horse when down.

ing that he possessed any unusual aptitude or ability in the control of horses during his early career.

I now desired to see Mr. Goodenough, Mr. Rarey's partner in England, from whom I hoped to obtain a clue to the matter. This I did not expect to accomplish, not knowing whether he were in the country, or even living; but I was finally so fortunate as to meet him under the following circumstances: In 1872 I gave test exhibitions in New York City (special reference to which is made in Personal Experience) before leading horsemen, to which Mr. Goodenough was incidentally invited by a friend. A few minutes before commencing the exhibition, Mr. Goodenough

was introduced to me. I was impressed instantly, "Here is the key to the whole matter." I found him a man nearly six feet tall, finely proportioned, of a strong, vigorous, progressive nature, and just the man capable of engineering and making a success of such an enterprise. I immediately said to him that he was the man of all others I wished to see, and that I would like a few minutes' private conversation with him. This he kindly granted, when I said, "There is one question I wish to ask, which you alone can answer. You were with Mr. Rarey when he subdued Cruiser, and I would like to know just how he accomplished it; for I am sure he never did it by the treatment he professed to have practiced upon him."

Mr. G—— replied, "How do you know?"

I said, "I have studied Cruiser carefully, and handled several of his colts, and the treatment will not work for me with anything like such success upon a horse of that nature and temperament, and I should like to know how Mr. Rarey was able to subdue him by such a method of treatment. It will make no difference now about the facts being known, Mr. Rarey being dead."

Mr. Goodenough laughed, and said, "You are right; he did not subdue him by that treatment. We tried it thoroughly upon him, and failed. I then advised Rarey to tie him down. We did so, and let him lie all night and the night following, when we could handle him as we pleased. This was the only alternative that suggested itself in the emergency, and we employed it."

After writing the foregoing, and giving the facts to a well-known literary gentleman (Mr. Robert Bonner of New York), explaining the importance of the discovery I had made, and adding that I intended to publish it, Mr. Bonner asked, "Is Mr. Goodenough living?"

I stated that I did not know, when he said at once,—

"It will not do to publish it unless Mr. Goodenough is living."

Not having any clue to Mr. Goodenough beyond having met him in the city eight years before, it was a matter of great difficulty to find him, and it was only after a long and diligent search that I was by the merest chance finally successful. I found him still in vigorous health at the age of seventy-two. He received me kindly, but on stating the object of my visit, he manifested a decided reluctance to say anything about the matter; and it was only after urgently explaining to him that it was necessary, not only to the present but to future generations, that the facts should be made known; that I wished to give in this book which I was about to publish only such simple facts as were necessary to a correct explanation of the principles of controlling and managing horses, and with the promise that whatever I should write upon the subject should not be published until first submitted to his inspection, that he, after two hours pleasant conversation,—during which time he gave me many interesting incidents in connection with his efforts in England,—gave me in substance the following statement:—

First becoming interested in Rarey's mode of treatment, and desiring to go to England for his own pleasure, and as a means more of recreation than of profit, he proposed taking Rarey to England for the purpose of teaching the system, and if successful, to divide the profits equally. Should the enterprise not pay, he was to return Rarey to this country at his own expense. As a preparatory step, Mr. Goodenough had exhibitions given before the chief officers of the government, which were highly satisfactory. He then obtained letters of introduction from the Governor General of Canada to Sir Charles York of the Horse Guards of London, also to Sir Richard Airy, Quartermaster General, to

whom he explained what he wanted; and by them he was introduced to Col. Hood, Prince Albert's Chief Equerry, who had charge of the Queen's farm at Windsor, and Lord Alfred Paget, the Queen's First Equerry, who were made confidants, and to whom the system was previously explained. By them he was introduced to the Queen and royal family, before whom he performed upon a four-year-old colt from the Queen's farm, and also upon other horses. These gentlemen permitted their names to be used in the *London Times* as reference for the faithful performance of what was promised.

Books were now opened at Tatersall's for subscriptions to learn the system, and two thousand names, comprising the nobility of England, were obtained, at ten guineas each. The first lesson was given at the Duke of Wellington's private riding school, upon Cruiser.

The facts in relation to Cruiser and his subjection were as follows: He was owned by Lord Dorchester, and had been vicious from a colt. He was kept for breeding purposes at Morrel Green, forty-one miles from London, in a building erected especially for him. He had on a simple watering-bridle, to which were attached two chains, each about twelve inches long, having buckles on the ends. The door of his stable was cut in two, and when they intended to lead him out for use, they opened the lower half and put in a bucket of water for him to drink. When he plunged his nose into the bucket to drink, they would quickly buckle to these chains two straps, each twenty feet long, when he could easily be led out between two men.

I asked Mr. Goodenough, "What about the big iron muzzle which it was claimed Cruiser had worn?"

He laughed, and said, "That was all advertising deception. I had nothing to do with that. There was no muzzle at all on him."

He leased the horse for six months by the payment of £100, stipulating that he should break the horse, and return him in good order. Should he fail, he was to pay £500, which he subsequently paid Lord Dorchester, and brought the horse to America.

Not wishing to follow the plan of the grooms in taking him from the stable, they devised the following one, and nearly failed. They backed a cart up near the door, and tried by various means to attach the straps to the bridle; but after an hour's effort, failed. Finally, while Mr. Goodenough stood in the cart and attracted the attention of the horse as he stood near the door, Rarey succeeded in slipping the strap over the leg and arm. Once on three legs, he was speedily brought under control by throwing. He was now led into the yard on three legs, and Lord Dorchester mounted him. They now repeated the treatment out of doors. The horse finally becoming greatly excited, resisted with the greatest fury, to use Mr. Goodenough's expression, "fairly roaring."

At this point, when failure was inevitable, Mr. Goodenough suggested the only means of success available,—tying down, and letting him remain until exhausted and submissive. He was accordingly led into the stable again, his fore-legs tied up, and he was thrown down, a collar put on, and his hind legs tied forward to it. In this condition he was left until the next morning, when they gave him water while down; but behaving gentle, he was released. They now fed and groomed him carefully, and led him behind a dog-cart to London, forty-one miles. To make sure, that night they tied him down again, when afterward he could be managed without difficulty. After this, Rarey handled and trained him every day for two weeks, when he had him under such good control that he could stand in the ring, and by calling, the horse would come out of his stall to him.

The Stafford horse was the worst one they handled. It was only after being subjected to treatment in the most thorough and persevering manner, and being tied down ten nights in succession, that they could, by using the greatest precaution, handle him with any degree of safety. The zebra was tied down every night for two weeks. Of course all this was kept a profound secret. In all critical cases, they invariably handled the horse in private until successful. Cruiser and the other horses were handled almost daily for two weeks, to insure their reliable management when in public.

Another fact was not known; namely, that the entire subjection of the zebra, and almost the entire work of subduing the Stafford horse, was done by Mr. Goodenough. At the conclusion of the interview, the writer asked, "Who wrote the three principles upon which it was assumed the system was founded?" His answer was,

"Oh, I fixed those up."

The foregoing has been submitted to me for revision and correction, and I find it a simple statement of facts.

New York,
June 2d, 1881. R. A. Goodenough

I would call special attention to the far-reaching skill and boldness of conception exhibited by Mr. Goodenough in the management of every detail of the enterprise, without which, success would have been impossible. First, in creating such great interest in and attention to their efforts; second, the ingenuity capable of suggesting such means of management as would give success; third, the skill and care with which every point of weakness was guarded and concealed until he had accomplished his purpose. This

certainly, when calmly considered, was one of the boldest and best executed feats of management ever accomplished in any field of effort, and justly entitles him to whatever success or honor there was in the achievement.

It struck me as of great interest to give a portrait of Mr. Goodenough in connection with his statement, and I re-

MR. R. A. GOODENOUGH
At the age of 72.

quested his permission to do so. This he at first, in the most positive terms, declined to permit, but finally, after much persuasion, and as a matter of personal favor, it was granted.

As before explained, any method of lowering the strength or vitality, such as bleeding, starving, depriving of sleep, etc., will give power to subdue the horse to any degree for the time; yet after the strength is regained, the character is liable to become as bad as before. This is proved by the cases referred to again becoming vicious.

The Allegan horse, "Case No. 9, Subjection," was starved to the point of helplessness, with other extreme treatment, without being able to hold him gentle; yet after a course of proper subjective treatment, he was held gentle without difficulty. The Hillman horse, "Case No. 7, Subjection," is another striking case. The most severe treatment failed to hold him gentle. If necessary, the same could be said about many other cases, showing such limited imperfect methods to be entirely inferior to the regular treatment here given.

As to the method claimed to have been used (disabling and throwing), it was good so far as it went, but it did not go far enough. This can be better understood when it is learned there was but one method of treatment, "throwing," for all kinds of horses, from the green colt that had never been handled, to the old horse of the worst character; all were treated alike. Of course it is easy to disable and throw a horse until he will not resist, so far as the act of throwing is concerned, but if the horse, after being thrown, persists in the habit, which may be expected in bad cases, it will fail. But even this principle of subjection we have now so far improved upon as to make it immeasurably more direct and powerful in effect.

If in wrestling a man could be thrown directly upon his back as fast as he could get up, it is evident a much more effectual impression of his antagonist's mastery would be made than if he were permitted to carry on a doubtful struggle for half an hour, that would only occasionally bring him to his knees. The very doubtfulness of the contest would stimulate him to the utmost resistance until exhausted. But if he were thrown at once, and as often as he could get up, his courage and confidence would be at once broken up, convincing him of the uselessness of continuing the struggle, and making the impression of mastery

all that could be desired. The effect upon the horse is the same. If the control is made direct and positive, throwing the horse on his side as often as he can get up, the confidence which stimulates the resistance is quickly broken up. Now this we are able to do by the improvement given in the First Method, which gives such power that any ordinary man can throw the strongest horse as quickly and as often as he can get up; in addition, he can hold him down or roll him back, as he pleases, thereby making it not only far more effective, but entirely obviating the objections of the old method. Yet even with this great advantage, it is seen that this method constitutes but a small part of my system, and is far inferior to the other methods introduced.

The ease and success with which the character of a wild or vicious horse can be changed when subjected to the proper method of treatment is wonderful. For example, a wild, unbroken colt that it would be dangerous to touch or even approach, and which it would be entirely impossible to control in harness, can, by ten to thirty minutes' judicious, subjective treatment, be made just as manageable and gentle as any well-broken horse. Or a runaway kicker that has become afraid of the wagon, and perhaps so vicious in his resistance as to be entirely unmanageable, can, by a

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NOTE.—In March, 1883, after the foregoing statement was in type, the writer visited New York City for the purpose of having new illustrations made, and obtaining assistance in the preparation of the medical department of this work. While there, he was incidentally informed by a prominent gentleman to whom he submitted the proof-sheet of the article, that the facts concerning Rarey's being taught by Offutt would be found in the issue of *Turf, Field, and Farm* of Jan. 4, 1878. To prove the assertion, the gentleman sent to the office of that paper for the files containing the issue in question, and read the article. It comprised an interesting account of a visit by the editor, Mr. Busbey, to Mr. A. Keene Richards, at the home of the latter gentleman, at Blue Grass Park, near Georgetown, Ky. At the close of this chapter (page 449) I give the substance of their conversation in relation to the matter, as an introduction to an extract from Mr. Offutt's book, which clearly shows that Rarey received his knowledge from Denton Offutt.

little treatment, seldom requiring more than twenty or thirty minutes, be made so gentle as to submit even to have the cross-piece come against the quarters,—a test that only horses of the very best character will bear.

This is strikingly illustrated in the ease with which the most stubborn horse can by a few minutes' treatment be made, without the least restraint of halter or bridle, to follow or run after the trainer with the docility and obedience of a pet. It is also shown in the ease with which a nervous, excitable horse can be made indifferent to an object

FIG. 265.—Effect of good influences.

FIG. 266.—Effect of bad influences.

that had previously induced in him the greatest terror. But it is mainly interesting as contrasting the facility and ease with which even horses of extremely bad character can be made entirely gentle when treated properly, with the difficulty of doing it when the treatment is not right; showing conclusively that the main causes of trouble in the control and management of horses are ignorance and bad treatment.

Properly considered, the art of taming and teaching horses consists in appealing to or acting upon the brain most forcibly in the desired direction. This can be done with great success, even without the use of much physical

force. Every one knows that a single word may often be sufficient to make such an impression upon the brain as not only to destroy all kindly feeling, but to perpetuate the greatest enmity ever afterward; also that character is formed by the influences to which the mind is subjected. This is proved by the fact that children, and those exposed to coarse or abusive influences, have the stamp of that character predominant, while those subject to kind, intelligent treatment have the better nature developed; also that even the most intelligent men and women can have

FIG. 267.—Effect of good education and influences.

FIG. 268.—Effect of bad education and influences.

the mind so perverted and weakened by the use of narcotics or unnatural stimulants, such as tobacco, opium, alcoholic liquors, etc., as to make it very difficult to overcome the habit. I give a series of illustrations showing the contrasts of character, the results of good and bad influences, for which I am indebted to the courtesy of Messrs. Fowler & Wells, of New York City.

On the same principle, the horse can be influenced in the formation of his character for good or bad, by the treatment to which he is subjected. We see that the impression of even a few moments is sometimes sufficient of itself to change the whole character for life. This is shown by the

ease with which many fine horses, though previously of the very best character, have been changed into dangerous, unreliable brutes, by a little carelessness which allowed them to run away, or by abusive treatment which aroused the temper into uncontrollable resistance, making them afterward practically unsafe and worthless for use. And on the same principle, when understood and properly applied, a bad character can be neutralized and overcome so as to establish a reliable condition of docility, as shown and

FIG. 269.—Result of good influences.

FIG. 270.—Result of bad influences.

proved in the many cases recorded in this and other chapters of this work.

The better to explain this, I give a variety of illustrations showing the effects of bad treatment and intensely exciting influences upon the nervous system. Understanding these principles and applying them properly, it is often wonderful to what a degree the brain can be acted upon in making a horse either gentle or vicious; showing that it is not only not difficult, but even easy, to make the most vicious, unmanageable horses as gentle and obedient to control as if they had always been of the best character.

It is a recognized fact that the horse partakes largely of the character of the owner. If he is kind and gentle,

the horse, on coming under such influences, though previously nervous and difficult to manage, soon becomes docile and gentle; while an irritable, passionate or impulsive man will often speedily impart the same characteristics to the animal he undertakes to manage.

To explain the principles governing these conditions, we will presume to make a few simple experiments. First, suppose a horse resists being shod; if the foot were taken up very gently, lifted higher, and gradually using more force as there is sufficient power acquired to hold and restrain it, until submitted to be pounded upon without exciting resistance, the success in the management of the

FIG. 271.—Effect of good influences and training.

FIG. 272.—Effect of bad influences and training.

case would be easy and simple. But if there is not sufficient tact and delicacy in taking up the foot, or the resistance becomes so great that it is pulled away, the treatment, no matter how successful up to this point, would not only be a failure, but to some extent make the horse worse by teaching him his power of resistance. It would be necessary in such a case to use such simple or direct means of control as will enable holding and restraining the foot most easily; but in the event of the resistance becoming so great that the foot cannot be held or controlled, then the restraint should be made of such a character as to first enforce general submission, when, if necessary, the treatment can be again carried directly to the foot, when

the control can be made easy and simple. In this we find there are two principles involved: 1. Tact and judgment to hold the inclination to resistance passive until the attention and confidence can be won, or until there is submission; 2. In using means of subjection, or force, to make every step of progress so sure that resistance cannot be successfully made until all inclination to repeat the habit is overcome.

Next, in the case of a wild, unbroken colt, to gradually overcome his fear by working indirectly to the point of his resistance until he becomes submissive. For example: If,

FIG. 273.—Expression of kindness and love.

FIG. 274.—Expression of disgust and hate.

after haltering, a pole were brought gently to the nose until there is no fear of it, then passed back slowly, at the same time gently rubbing the mane and other parts until it can be passed around the quarters without exciting his resistance, it would be just as good, if not better, than if subjected to more severe treatment. But if he resists, or is so vicious that he will not submit to this treatment, then he must be subjected to such treatment as will most directly neutralize and restrain his resistance until this can be done and the impression made permanent, when but little difficulty will be experienced in enforcing docility in even the most vicious cases.

The principle is the same in the management of kicking, runaway, biting, striking horses, as well as horses of other peculiarities of resistance, the point being, first, to use tact in addressing the animal's intelligence without exciting his fear, or to the least possible degree, and, as in the examples referred to, resorting to such means of restraint or power to impress the brain sufficiently, without injury, to compel obedience, and fix the condition of docility,—more or less being necessary to be done, according to the severity of the case. Although I have given in the

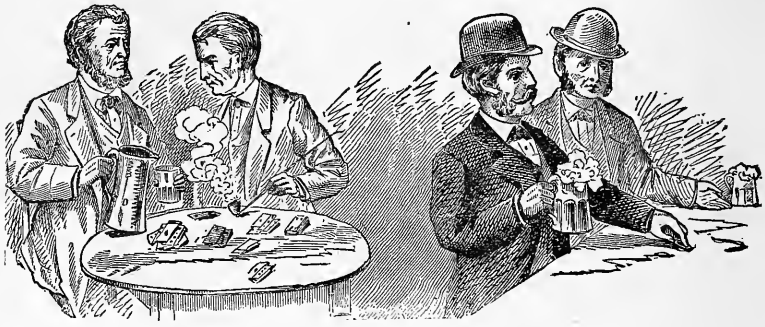

FIG. 275.—Primary effects of intemperance.

first chapter very full details of the principles and best methods of doing this, which, with the details of their application for the management of the various habits, to be found in subsequent chapters, should make it sufficiently clear to the reader, still I think there are some points that require in this connection more full explanation. I would allude particularly to the necessity for adapting treatment to conditions of intelligence and character, the importance of not neutralizing or counteracting the effects of the treatment by exciting resistance, the effect of drugs, inherent power, etc.

The study of physiology teaches that the primary units, or protoplasm, are in all cases the same; that each peculi-

arity of action or sense is governed by aggregations of these, called nerve centers; that, for example, the nerve centers controlling the senses of smelling, tasting, feeling, seeing, balancing, etc., are at the back part or base of the brain; that the power and activity of these senses are in all cases governed by the strength and activity of such ganglia of nerves. Thus, a hound that follows the scent, or a bird-dog that has the power of smelling game at a distance, has large development of the olfactory nerve; while the grey-hound, eagle, vulture, etc., that depend upon seeing game

FIG. 276.—Ultimate effects of intemperance.

at a great distance, have large development of the optic nerve; and others that depend for safety upon hearing, have large development of the auditory nerve. Thus every peculiarity of animal nature has some special excellence of power, adapted either to aggression or defense. The bee has its sting, the viper its fangs, the bull its horns, and the horse bites, strikes, kicks, etc.

The front brain, or cerebrum, gives the power of sense, or reason, and animals of but small brain have but very little capacity for being trained or taught, while those having considerable brain can be easily taught. For example, a fish has very little or no brain, and cannot be taught any-

thing, while a dog, elephant, or other animal that has considerable development of brain, can easily be taught a great deal.

In like manner there are greater or less degrees of a natural tendency in horses to viciousness and resistance, imposing more or less difficulty in their subjection. Twenty horses may kick or run away, and so far as the act of resistance is concerned, there is practically little or no difference. One horse may yield to treatment in a few minutes, the next may require a much longer time, while the third, though subjected to the same treatment, can perhaps be controlled only after hours of extreme effort. Consequently, success in the subjection of any particular case, or in overcoming any special habit, must depend, first, upon the amount and quality of the brain; second, the degree to which the nervous system has been impressed or deranged; third, upon the pluck and endurance of the horse; and fourth, the directness and power with which the resistance can be restrained or controlled, and the skill with which the treatment is applied.

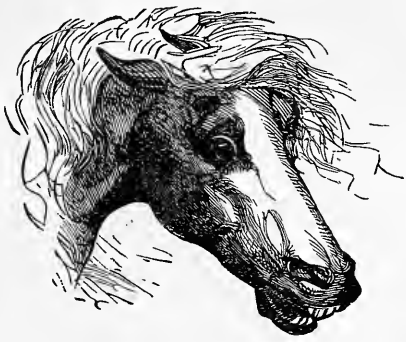

FIG. 277.—Expression of aggressive viciousness.

FIG. 278.—Expression of docility.

It is evident that a very timid, sensitive nature, which is moved entirely by fear, can be controlled best by patient, winning treatment, while a stubborn, aggressive type of character must be met by force, or the fear of punishment. Hence, in proportion to the predominance of these peculiarities there must be force, or winning treatment, or both combined. To illustrate: A sheep or gazelle, or any animal of that nature, can be managed best by gentle, winning treatment. To excite them in any way would undo the effect of a great deal of patient work, while the bear, hog, mule, and kindred natures, will bear force; and punishment in many instances becomes a necessary condition of their management. The horse possesses, to a singular degree, these, with other remarkable modifications of character, not only making a combination of kindness and force necessary, but this force must be of a character not to excite pain, or to stimulate the bad nature, as this but neutralizes or counteracts the effects of good treatment. This is particularly the case when there is much sensitiveness, or where there is much tendency to the strong, wild,

Fig. 279.—Expression of viciousness.

Fig. 280.—Expression of kindness.

courageous type of nature. These conditions show that no matter how good and perfect the treatment, success must depend greatly upon the skill and judgment of the trainer in properly adapting the efforts to the conditions of the case.

First, these conditions require enforcing submission before the horse becomes greatly excited and warmed up. Should there be failure before this is accomplished, the dif-

FIG. 281.—Expression of rage and fear.

ficulty of making him surrender unconditionally will be greatly increased.

Second, the horse must be made to understand the harmless character of objects and sounds forced upon his notice, until intelligently reconciled to them.

Third, the co-operation of his intelligence and better nature must be won by kindness to permanently fix the impression of control. In doing this, we see that so far as we can show a horse in any way that we are master, he will become submissive and gentle. Thus by disabling and throwing until he is so discouraged that he will not try to resist, he will become gentle to handle; but if he is allowed

to get up immediately and move about at will, he may again resist with the greatest courage. To make him reliably gentle upon his feet, he must be controlled in this position also. For example, should he resist the bit and run away, subjecting him to any treatment short of direct control of the mouth, and that at the time and in the position of his resistance, would be defective or entirely useless.

FIG. 282.—Expression of strong, determined character when mad.

On the same principle, should the horse kick, balk, or show any other bad habit, sufficient power must be used to combat or overcome these habits directly, or there cannot be assurance of success. Of course it is easy, in a general way, to subdue a horse; but the difficulty is to do it so as not to excite his resistance, or to do him any physical injury.

FIG. 283.—Expression of nervous excitability.

In teaching a colt to lead by the halter, or follow, if the pull is brought upon the head sideways, his power of resistance in this direction becomes so lessened that he can

be pulled around instantly and easily, and he can soon be taught to come around and follow without resistance. But if this cannot be done with the halter, increase the power of pulling by means of the War Bridle, or decrease the power of resistance by tying up one foot.

If, on the other hand, the pulling were made straight ahead, which is the more common method, the work will be done at a great disadvantage, because in this way we stimulate resistance, if we do not give power successfully

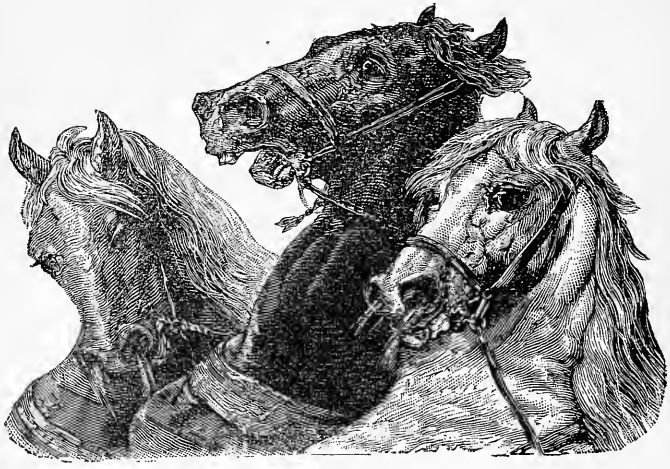

FIG. 284.—Effect of intense fear.

to resist us. This mode of pulling would retard, if not wholly neutralize, the effort to control the horse, as he would now involuntarily draw backward, bracing himself with his legs, thus increasing his power of resistance, which soon shows him there is not sufficient strength to move him. Hence the necessity of combating the resistance in such a way as not to permit this to be done. Either or both the methods combined will give sufficient power to compel his following without causing him injury.

The principle is the same in combating a habit, or viciousness of any character. But should the resistance

be so great that it cannot be overcome by simple treatment, then the more direct means of obtaining power must be used, such as the various methods of general subjection, using one or more, according to the character of the case.

The art of taming horses, or the principles of subjection, may be divided into four general classes. The one entitled the First Method of Subjection, in the first chapter, is the most sensational, and is based upon making the horse partially helpless by tying up the fore leg, and throwing. This, though necessarily limited in its effects, when properly done is a valuable method of subjection. Throwing him repeatedly and rapidly as often as he can get up, and rolling him back until he gives up unconditionally, is the full extent of the power of this method. If the horse be of a nature to submit fully to this method, the result will be very satisfactory; if not, it should be followed by the other methods.

The second, called the Second Method of Subjection, is simpler, and is based upon the principle of preventing the horse from concentrating his purpose to act until he can be rendered helpless, and be subdued. In the subjection of colts and some strong, dangerous young horses, that, when approached, strike and kick, and upon which it would be not only extremely difficult, but dangerous, to try the other methods, this method will be found especially effective. It is also a reliable reserve to be used in connection with the other methods, particularly the first, or in effecting control when the others prove inadequate. It gives the true key for breaking single balkers, as it not only gives power to move the horse at will, but disconcerts the mind from the purpose of resisting, by the confusion it causes.

This form of subjection, simple as it is, requires very nice discrimination to bring out its full effects, especially in the management of very bad cases; for if not carried far

enough, there is liability of failure, and even when carried to the fullest extent of its power, there may in some cases be resistance to it. These are usually cases that, when warmed up or handled carelessly, become desperate in their resistance before being made to yield. The point in the management of such is to follow with the Third Method, which will usually make the horse submit. But if there is much resistance to it, after cooling off, another sharp or short lesson with this will rarely fail to produce unconditional submission.

Third, by pressure upon the spinal cord, which grasps, as it were, and holds in subjection at will, the very life of the horse. This is called the Third Method of Subjection. It will be found especially adapted to the subjection of nervous-tempered horses that will not bear excitement. For example, a horse that in an attempt to throw would become so irritated and excited as to jump and resist so much as to endanger straining, or if subjected to the Second Method would go so quickly as to be liable to fall down directly, or be made to yield only after the most severe effort, will usually submit readily to this method of treatment. If a kicker in harness, that exhibits fear when anything is brought near or against his quarters, subjecting him to pressure of about three cords, and touching the quarters gently with a pole until indifferent to its contact, will usually compel submission in a few minutes. Horses of an ordinary bad character submit in from eight to twelve minutes, but exceptionally bad cases may resist it thirty minutes, even with the use of four cords (100 feet); but in all cases it can be supplemented by the other methods.

One important point I wish to impress is that whatever is intended to be done with this method, must be done at once, and carried to the fullest extent that the horse will bear. If he resists it, it must at once be abandoned,

because it is liable to make the cheeks more or less sore; also the effect is not satisfactory when repeated next day, or at any time afterward; so that if the point is not made at once, other treatment must be resorted to.

I seldom use this method in the management of colts, because they are liable to bite, or chew the lips or cheeks. In their management, the Second Method, in connection with the War Bridle, is far more simple and easy. Occasionally an old horse will do this, and may resist the treatment violently, and become much excited over it. In such a case it must be at once abandoned.

Next come the various modifications of the War Bridle, which give all the power necessary to subdue and control more than half of the average of vicious colts and horses. It is all that is necessary for nearly all horses bad to shoe, harness, etc., and is by far the best means of teaching a horse to lead or follow. It is one of the most effective means of overcoming the habit of balking. Though a minor method of subjection, I regard it so important that I have given a careful explanation of it, very fully illustrated.

The Breaking Bit and Patent Bridle are equally important in their places. The Breaking Bit, without doing injury, gives power to train the mouth so that it will yield to an ordinary bit. The Patent Bridle was invented by me for the purpose of enabling persons lacking in practical experience, to directly control headstrong, lunging, runaway horses. In the first place, the extra adjustment over the upper jaw gives such power upon the mouth that the most reckless horse cannot successfully pull against it, and he will in a short time be so unnerved as to become submissive to a slack rein. Secondly, the pressure upon the spinal cord is so intense that courage to pull cannot be maintained for any length of time. When he gives up, it becomes simply a common bit in his mouth, but ready to

instantly bring to bear the same terrible pain and power before felt. I also give illustrations of very powerful but simple means of controlling headstrong horses by the Half-Moon and other bits.

I call attention in a general way to the application of these methods, because much depends both upon the way they are used for cases to which they are specially adapted, and in properly following with the next best suited to the case. When the case is critical, an important point is to make every step of the treatment sure, and to vary it all the horse will bear; for the more ways in which power to enforce obedience can be applied, the more impressive and enduring will be the effect. Consequently, if the case be bad, it may be necessary to apply two, or even all three, of the methods of subjection. Suppose the case to be a bad, young, kicking horse, the First Method will usually be found applicable; he would be likely to resist the Second too severely to make it successful. The best course would be to send him around a few times, enough to take off the wire edge of his courage, then put on the throwing rig, and throw him rapidly eight or a dozen times, when his subjection will be easy and simple. When on his feet, and especially when driven around in harness, if it is discovered that he is yet so sensitive as to be liable to kick or break over, the Second or Third Method should at once be used. Not unfrequently both will be necessary. The First will do no good if repeated, for the reason that the horse will lie down, and remain passive while down, but when up may kick as viciously as before. Sometimes the Third Method may be tried, and the horse not submit to it unconditionally; then the Second or First are to be tried. The difference between the First and Second is that the First cannot be repeated with success, while the Second can be; and usually in very bad cases I hold the Second as the reserve

power. As explained in the first chapter, it will not do to use the First Method on a sullen or sulky horse. He will usually drop down upon his belly, not trying to get up. In such a case dependence must be placed upon the Second and Third alternately.

The mustang, of a wild, dangerous nature, cannot be safely approached and subjected to the Third Method, because he would strike the moment approached. If a rig could be put on, and the foot tied up (which would be very difficult to do), the instant freedom is given again he would be likely to bound into the air, or drop down sullenly upon his belly, either doing nothing or acting like a desperate maniac. For such the Second Method would be just the thing. It requires very little effort to tie the halter into the tail, and send around until helplessly dizzy, when the subjection of the case becomes simple and easy. A wild mule, that cannot be safely touched, can frequently be made entirely gentle in a few minutes in this way, and after this treatment, if necessary, the other methods can be used.

If space permitted, these explanations might be extended indefinitely. But whatever the success of the direct treatment, it is important to hold the advantage gained, by kind and careful after-treatment, because upon kindness must depend fixing and holding the impression made upon the brain by the previous treatment. Without this, it is practically impossible to hold a very vicious horse gentle. It is, of course, easy enough to compel obedience by force, or by reducing the strength; but unless the incentive to resistance is overcome, which must really be done by kindness, the instinct of viciousness is liable to again gain the ascendency. The importance of this is repeatedly urged in the previous chapters. Without this, the best results of direct subjection can easily be neutralized, and the horse be permitted to go back into his old habits. Should this occur,

the difficulty of his subjection would be greatly increased, as such failures teach the horse to become cunning, and give him confidence to fight back at every opportunity. This is the reason why I refused to handle the Portland horse "Jet" (Case 7, Subjection), until I could remain in the city long enough to see that the after-treatment was properly carried out. Without this care, there would have been failure. It was the main key of making the "Arnd" horse, of Bath, N. Y., gentle. I refer to these as good representative cases; for without this care neither of these horses could have been held gentle, and it is equally important in the management of all cases.

The great power and effectiveness of these methods when properly applied, will enable the trainer to easily and safely control the most powerful horses to any extent desired. This is proved by the success of my experiments upon all kinds of horses which had resisted all previous efforts to break. Reference to a few representative cases will be found at the close of this chapter.

The subjection of "Wild Pete," the "Hettrick Horse," "Wilkins Horse," "Omnibus Horse," "Portland Horse Jet," and many others that might be named, equally vicious, when the character of the horses, and the shortness of the time required to produce the changes, are considered, may seem to border so closely upon the miraculous as to appear incredible; yet these results were accomplished simply by the skillful application of the methods of treatment here given.

Many people suppose there is a medicine or something of the kind that will make vicious horses gentle, or enable their control at will. Sometimes, when unusually successful in the subjection of an exceptionally vicious horse or colt, though the treatment had been carefully explained to the class, the result would appear so wonderful that they

could not realize how such a change could be brought about by the treatment employed. It was not unusual to have persons smell of my hands or clothing to see if they could discover some peculiar odor about me to account for so great an achievement.

On this account, I think it advisable to explain what medicines are supposed to do this, and their effects. The main object in the use of odors, or scents, has been to attract attention, and divert it from the real means of control. Many odors, or scents, will in some instances affect the nervous system greatly. Blood, a buffalo robe, or any offensive odor, will intensely excite many horses. In trapping for mink or other animals, it is no uncommon thing for the hunter to conceal the smell of his hands from the trap, and attract the animal to it by using some odor that is agreeable to him. Asafetida put on the bottom of the boots will cause wolves to follow the wearer eagerly. While this is admitted, there is no odor or medicine that I know of—and I have experimented carefully with all those supposed to have this power, without obtaining decidedly satisfactory results—that will make a wild horse approachable and induce him to follow, or make a vicious horse gentle.

What is supposed to be the great medicine for doing this is called the "Arabian secret," which consists of two parts of the oil of rhodium, and one each of cumin and anise, to be kept in separate bottles and corked tightly; but practically it makes no difference whether they are kept separate or not. A little of this is to be rubbed on the hands, and while held before the horse, approach from the windward side; when near enough, rub a little on his nose, when the horse, it is claimed, will follow anywhere. Other essential oils are recommended for the same purpose, but their effect is really no better than good apples or any-

thing of which the horse is fond.* Warts or ostlets, growing on the inside of a horse's leg, dried, and pulverized with a coarse rasp or grater, and about a thimble full blown into the nostrils, is also claimed to make any horse gentle. This is to be used in connection with the oils mentioned. The oil of parsley is sometimes used for the same purpose. A few drops are put on the hands or handkerchief, and the horse is allowed to smell of it. The perspiration from under the arms, rubbed on the horse's nose, or breathed into the nostrils from the hand, is also held as quite a secret for making a horse so gentle that he will follow readily.

Before and during the time of Rarey, parties understanding the secret of "throwing," usually managed as follows: Force the horse to lie down on the barn floor until submissive; and, while lying quietly, open the door and allow the people to come in. Under such circumstances, much curiosity will be manifested to discover what has been done. The operator now, while pretending that he is unobserved, will slip a piece of apple into the horse's mouth, and rub the hand over the nose. This will of course be observed, and when curiosity is sufficiently aroused, the pretended tamer will say, "Yes; I have a secret scent by which any horse can be tamed, the effect of which you see." Then he will offer to sell the secret, naming a large price, but finally taking what he can get. I have found in my travels many who have paid from ten to fifty dollars for the "Arabian secret." The control was obtained by throwing. But this in itself being too simple to inspire much faith, the medicine dodge was added.

* Denton Offutt's book, which I have carefully read, and the best features of which are given at the close of this chapter, contains some secrets for taming horses and other animals, for the virtues of which he claims a great deal; but they are practically of no more consideration than other treatment of the same kind. Still, I thought it advisable, and of sufficient interest to the curious, to copy them verbatim, and they will be found embodied in this work.

The man who was most instrumental in teaching this method of "throwing," was Mr. O. H. P. Fancher, before referred to, who claimed to have given Rarey instructions on the practical application of the method of subjection which he practiced. In 1865 and '66, I traveled through his section of country, and hired to him one of my horses trained to drive without reins, when he took the road, teaching my system, and abandoned the medicine scheme.

Catlin, describing his travels among the North American Indians, mentions the manner of their taming horses as follows:—

"The Indian coils his lasso on his arm and gallops fearlessly into the herd of wild horses, and soon gets it over the neck of one of the number, when he instantly dismounts so as to hold him down and prevent him from turning over on his back. He now gradually advances until he is able to place his hand on the animal's nose and over his eyes, and breathe into his nostrils, when the horse becomes so docile and conquered, that by removing the hobbles from the feet, he can be led or ridden into camp with very little difficulty."

According to this statement, which seems reliable, covering the eyes and breathing into the nostrils of the wild horse, was the principal means of his subjection; if true, it would be an easy and simple matter to make a vicious horse gentle. I have repeatedly tried the experiment upon all kinds of horses, and found it would not produce any appreciable effect for me, and consider it practically of no more account than merely stroking the head and nose with the hand.

I might add many other pretended secrets, but none of them are worthy of much consideration. Ostlets, before referred to, taken from a vigorous horse, properly prepared and used, may produce very satisfactory results, especially

in the management of balkers. They should be prepared as follows: If the subject be a mare, the warts, fresh and strong, should be taken from a healthy horse. Sometimes old accumulations lose their strength, and are good for nothing. Dry the ostlets carefully, and grate them to a fine powder, and keep in an air-tight bottle. One hour before the horse is driven, blow an old-fashioned thimble full into the nostrils, and the horse will usually go off all right.

This secret was given me by an old man in Western Ohio, who, with his sons, about ten years ago, was a member of my class. After taking me one side, and expressing his appreciation of the information I had given him, he said he would give me a secret that he had practiced for forty years, and had never known it to fail. "Every one around here knows," said he, "that I can drive any balky horse, but never learned the secret of my doing it. I am now an old man of seventy-four years; and not intending to handle any more horses, I will give it to you for your benefit." He said he had never in any case found it necessary to repeat it more than two or three times.

Sometimes a horse that has learned to kick his mate, can be cured by giving this. It would also be good when a horse objects seriously to the scent of a buffalo robe or other object, to blow this into the nose, because it conceals the repugnant odor. It will also be found the principal ingredient in the remedy for the cure of fits. (See "Medical Department" under the head of "Miscellaneous Recipes.")

I would here add that I have had so little trouble in breaking balkers by the treatment explained under that head, that I never used this; but I have given the secret to many, and reports have been favorable. A great secret among some dog fanciers is holding a little of this in the

hand, and letting the dog smell of it, when he will follow anywhere. The secret of the effect of these ostlets upon the horse, is undoubtedly the strong pungent odor, which has a remarkably soothing effect upon the nervous system, by which the horse is disconcerted and won from his purpose of resistance.

It is well known that gypsies are very successful in managing vicious horses. Their method of management is to boil a plug of tobacco in a gallon of ale, until the strength is extracted, then give enough of it to make the horse so sick that he cannot resist.* He is then driven as desired, and when over the effect of it, the dose is repeated, if necessary.

I never but once resorted to the use of medicine to control a horse before a class. When at Howard, Steuben Co., N. Y., a strong, wild, unbroken colt seven years old, was the subject of experiment. At the time, I was so prostrated by ague that I was not able to give the horse sufficient treatment to drive him under canvas or in the street with safety. The class insisted upon my doing this. I therefore proposed to the owner that the colt be taken to the next town, where I would be on the following day, when I would make him drive gently, promising that if I failed to do so satisfactorily, I would return them their money. Next morning I was more prostrated than before, but as my failure to drive the horse in the street would necessitate a return of the money, and make it impossible for me to form a class there, I was compelled to resort to strategy. I directed one of my men to go to the drug store and get two ounces of tincture of lobelia, and, when free from observation, give it to the horse. In about half an hour,

* This was given me by a gypsy who was a member of my class. Gypsies have been repeatedly in my classes since, and all admit that this was their principal secret.

when I supposed he felt the full effects, I subjected him as a matter of form to the Second Method for a few minutes, and then drove him through the streets perfectly gentle. The fact was, he had become so sick that he could not resist. I now directed the man to put him in his team and drive home. Knowing the temperament of the horse, I concluded he would submit to this means, which he did, but I resorted to it only because of my weakened condition.

I was informed by the owner nearly a year afterward, that the horse remained entirely gentle, and that if I would return again to H——, he would warrant me a large class. I have experimented carefully with this method of treatment upon a variety of cases. Sometimes it would work exceedingly well on those of a cold blooded nature, but courageous, strong-willed cases are liable, when excited, to resist it, even when given much larger doses. (Two ounces should be about the maximum dose for an ordinary sized horse.) In addition to making violently sick, it is liable to produce severe attacks of colic. One horse I experimented upon in this way became subject to colic.

Control by the Eye, or Will.

It is supposed by many that certain persons possess a peculiar power by which they can with safety approach and control a vicious horse as if by magic. In the sense understood, this cannot be done. There is no inherent power beyond that of nerve to conceal any impression of fear or timidity, and the ability to exercise accurate judgment in determining what to do and how much, so as not to excite resistance until the horse is under control. For example, standing just beyond his reach, and looking fixedly into his eye, saying with sternness, "Get around!" until he is disconcerted, then approaching the shoulder and passing the hand quickly but smoothly up to the halter or

bridle, thence to the nose-piece, and grasping it firmly, will enable one to approach some horses with safety, which it would be dangerous to go near without.

It is an undoubted fact that a certain class of snakes can so charm birds as to disable and catch them, and there are well-authenticated cases of their charming children and men. An intelligent lady, in whom the writer has perfect confidence, stated that in two instances she had seen small birds charmed by a black snake. Once, when stepping over a log, she saw a bird in the act of flying into the open mouth of a large black snake which lay coiled upon the ground at the opposite side.

I copy here another instance of this kind from the Petersburg (Va.) *Index-Appeal*:—

"The Snake's Ability to Charm.

"A veritable instance of the peculiar fascination which the snake exerts, was witnessed a few days ago within a short distance of our city. The gentleman who saw this says he was walking leisurely along the road when his attention was directed to the movements of a brown thrush which was flitting about near a small plum bush, and, at intervals, giving a cry as of distress. He walked up to the bush, supposing he would find a brood of young birds. He looked carefully, but saw nothing, and was walking off, when he noticed that the thrush had returned to the bush from which he had frightened it. He waited a moment to watch its movements, when he saw it fly down on the ground beneath the plum. There it stood still a short time, then began to circle around the bush, still crying in its peculiar tones. This circling was kept up for a while, and then the thrush seemed gradually to weaken, and at length stood perfectly still—immovable, with its wings partly open, and its head bent forward. He drew nearer to the bush, when he heard an ominous hiss, and, looking down under the plum he saw a large black snake coiled up, and about to spring upon the bird. He frightened the snake away and picked up the bird, which made no effort to escape, and seemed powerless. In a few minutes, however, the bird revived, and shortly afterward flew off."

It is also a fact that some men, by an effort of the will, can control others, as shown by the art of what is termed

psychologizing, or putting into a state of trance. This has led to a very general belief that, in like manner, certain persons have the power of controlling vicious horses, so that they can be rendered completely gentle. I have at different times seen plausible statements by different writers sustaining this theory. But notwithstanding man's intelligence and will power are greatly superior to that of horses, I never have known of a horse being directly controlled in this way. I think I may assume, without presumption, that I have subdued, and had treated under my supervision, more exceptionally vicious horses than any other living man. It has been a matter of hard, practical experience with me, and I know it is impossible to control wild or vicious horses by will power alone. I am so confident of this that I will give any man one thousand dollars who will show that he can control wild or vicious horses in any such way. I have many hundreds of times made wild or vicious horses so docile that they would run after, or follow me around, without the restraint of a halter, or without being touched in any way,—a feat in most cases not at all difficult to perform on a suitable subject. And as I have stated in another place, though the principles were carefully explained those present would often insist that it must have been done by some secret power. I am thus emphatic to correct this false impression, which seems to prevail in the minds of all classes of society.

As explained in another part of this chapter, any method of impressing the horse with the sense of helplessness, such as disabling, repressing by fear, intense pain, or the reverse, quieting the nervous irritation by scratching the mane and tail, giving apples, etc., can to a great extent hold passive the impulse of resistance. The principle is to so change or disconcert the general nervous action, as to secure the more easy concentration of the nervous forces

in the direction desired; hence every method of repressing by fear, or revealing power by action or voice, etc., may be regarded as the expression of this power, which of course no one denies. But that by will power alone, the character of a horse can be held completely submissive or in a marked trancoydal state, is entirely impossible.

Having taken lessons in psychology many years ago, I found that I could to a certain extent control the will of others; yet notwithstanding the greatest effort, I never have been able to control horses without first impressing the nervous system with a sense of physical power. The cases which are most likely to resist such management, are stallions which have grown into viciousness through bad treatment, and mustangs, or those of a fixed, wild nature. The "Wilkins Horse," "Hillman Horse," and "Mustang Pony," Cases 6, 7, and 11, Subjection, and the "Hettrick Horse," No. 4, Kicking, are cases in point. As a matter of experiment, while the "Hettrick Horse" was tied to the center pole of the ring, I tried for over an hour to even get near enough to touch his body without being struck or kicked, and if my life depended upon it, I could not safely do it; yet by less than twenty minutes' proper subjective treatment, his submission was made complete. In proof of this, reference could be made if necessary to a great many of like character.

When a horse is thoroughly vicious and unmanageable, subjecting him quickly to a full course of treatment, surprises and breaks up his confidence, on the same principle that the eye disconcerts and controls, with the difference that now it is the result of direct physical control, when by careful management he can be held gentle. But in doing this, as I have repeatedly remarked, it is fatal to success to let the horse see, at any point, that there is not sufficient power to master and control him. Sometimes,

when this is well done, the will of the horse is so thoroughly broken, and made so submissive, that, though previously so vicious as to be entirely unmanageable, he may become among the safest and gentlest for use. The main point of success, after he thoroughly submits to coercive treatment, is to win his affections.

ILLUSTRATIVE CASES.

As an additional aid to the reader in studying this subject, I include the details of treatment in the management of a few representative cases.

Case 1.—Mt. Vernon Horse.

This was an eight-year old, sorrel gelding, weighing about 1100 pounds. He had an exceedingly strong, tough organization, but was most remarkable for his wild, treacherous, sullen nature. He was one of the best types of this peculiarity of character the writer ever treated. His head was almost the exact counterpart of that of the "Hettrick Horse," Case 4, Kicking, but was immeasurably the worse horse to subdue. He could not be controlled in harness, double or single, was so strong and tough that up to the time of his being brought to me, his temper had not been subdued by any treatment given him. He would kick out sideways and kill a hog whenever brought near one. He was in fact one of the most dangerous and difficult horses to break ever known in that country.

I had been at Mt. Vernon, Ohio, over a week when this horse was brought in to be treated before the class. The moment I saw him across the ring, I made the remark, "There is a worse horse than I have ever yet treated in the State." The owner, offended at my giving his horse so bad a character, said he could handle and drive him. Though I knew nothing whatever of the horse beyond

what I saw of him at a distance, I stated that there was not a man in the country who could drive him, and if I could not prove it, I would charge him nothing for my instructions. Upon trial with a severe bit, he went straight along in defiance of the pulling of ten men upon the reins, when his bad character was confessed.

Had I not been able to prepare the minds of the class to see the true character of the horse, he would have broken me down; but in fact my statement was accepted as a reasonable explanation, and so I had an opportunity to repeat the treatment until successful. I had a very large class of experienced horsemen, and it became a matter of deep interest for them to see whether the character given him would be fully proved by trial. He was subjected first to the First Method, which he resisted with great energy. This was followed by the Second and Third Methods, carried to the fullest extreme, when he would allow his quarters to be touched all around with a pole, and could be handled without difficulty.

He was next taken in hand for over an hour to obtain control of the mouth, but without making the least impression upon him. This I expected and explained to the class, and put him over till the next day, when he was again subjected to the Second Method sharply, and the training of the mouth repeated, as before, for about an hour, with but little apparent success. This was extraordinary, there having no horse been brought forward for years that did not in two lessons yield to the control of the bit; but I promised that one more lesson would bring him. On the day following, he was again subjected in part to First and Second Methods, and the mouth again taken in hand, though quite sore from the effects of the previous treatment. His wonderful pluck and nerve enabled him to fight it with the utmost desperation for nearly an hour,

when he at last gave up unconditionally, and was driven before the class and upon the streets with entire success, afterward remaining perfectly gentle and manageable.

A week later, he was exhibited in the street at a little town eight miles distant, where he was owned. His good character and performances enabled me to make a large class there.

Case 2.—Gallopsville Horse.

This was a seven-year old sorrel gelding, owned in Gallopsville, N. Y. He was a remarkably fine, muscular fellow, weighing about 1050 pounds. I refer to him as a good type of an extremely bad, unbroken colt, and but a slight modification of the previous case. In the preceding case, when the horse was hitched up, he would go, perhaps, some distance, and then, suddenly and without warning, pull ahead, or kick and run away. And, once resisting, there was no possibility of holding him afterward. He was a snorting, treacherous brute of the worst kind, and when brought forward for treatment, was considered entirely unmanageable in harness.

The touching of the harness, or anything brought against his quarters would cause him to jump or kick with great fury. At this time I remained but one day in a place, and taught my classes in any kind of a building available. At this place we had a small carriage house with hard-wood floor, which was so unsuitable that to attempt the subjection of such a horse here would be not only very difficult, but dangerous. On this account the First Method, which was well adapted for his temperament, could not be used. Consequently he was subjected first, cautiously, to the Second Method, which was a necessary step toward toning down his extreme sensibility, but he could not be pushed to its limits on account of the hard-wood floor, the smallness of

the place, and the large crowd present. He was next subjected to the Third Method, which was carried to its fullest extent. While being subjected to it, if touched with a pole, the energy of his kicking was so desperate that both shoes, though nailed solidly to his feet, were thrown off in a few minutes. Not submitting satisfactorily to this method, it became a matter of necessity to subject him again to the Second. The place was partly cleared, and the chances taken of pushing it to its fullest extent, to which he submitted unconditionally. The rest was easy, little more being necessary than putting him in harness, when he drove off gently. Next day he was taken to Central Bridge, where the owner and class were promised that he should be driven in the street. It being quite safe now to attempt driving him while warm, he was put away till next morning, when, after testing a few moments, he was hitched up and driven perfectly gentle. The change was regarded quite wonderful by those who had known and witnessed his previously vicious character.

Case 3.—Buffalo Omnibus Co.'s Horse.

This case has some points of peculiar interest, for which reason it is included. First, it shows to what degree a naturally good, gentle horse, can be made vicious by irritating, bad treatment; secondly, the ease with which, sometimes, a horse supposed to be very vicious can be made gentle. The particulars of the case are as follows:—

This horse was nine years old, a bright bay, remarkably fine, strong, intelligent, and weighing about 1200 pounds. He was regarded one of the best in a large stable of horses. He had been worked to an omnibus, and, it seems, gradually became vicious, requiring great care in harnessing and handling. He finally bit and crushed a man's arm, and inflicted such other injuries as nearly killed him. The man

was rescued only by the prompt interference of the other men. The horse was so furious that he would jump at and bite other horses, and it was finally only by the use of pitchforks, etc., that the stablemen were able to drive him into his stall, where he stood with his collar on for over three months. No one daring to go near him, his food and water were let down to him from above. Unable to work him, and fearing he would kill some one, the superintendent had ordered him shot, but for some cause it had been put off until the period of my visit there.

FIG. 285.—Omnibus Horse.

Before commencing my exhibition in this place, a gentleman who was especially interested in my efforts, privately informed me of this case, and said there was a strong faction of opposition there. They asserted they might consider it worth while to come and see me after I had subdued the horse; that I could not or would not dare attempt it. I at once informed the people of what I had learned, and promised, if I could obtain the horse, to take him in hand before the class.

At my earliest opportunity, I called at the stable, and the horse was pointed out to me. I was confident I should have no trouble with him, and told the superintendent that if he would let me have the horse to experiment upon before the class, I would subdue him. He frankly said that the horse was too dangerous to take any chances with,

and he did not wish to take any responsibility in the matter; that if he permitted me to take him, and I should be killed, or injured in any way, the public would censure him. He said further that the horse was of no value, and he had ordered him shot.

I finally convinced the gentleman that there would be no difficulty in the management of the case, and obtained permission to take him over to my building, where, in the presence of leading citizens of Buffalo, I made him entirely gentle in about twelve minutes. He was simply subjected to First Method, followed by War Bridle. His collar, which had now been on for over three months, could be taken off or put on at pleasure. I told the superintendent to put him at once at work, and have him treated with the greatest kindness, and if at any time he exhibited the least viciousness, to report to me. In about a week he was brought back, and subjected to very severe tests before them, and proved perfectly gentle. I include here an editorial notice of this case, and a letter from Mr. Ford written three months afterward :—

"A Horse that Killed one Man and Injured Several Others.

"We yesterday afternoon visited the amphitheater of Prof. Magner, the noted horse-tamer, on Carroll street. We found there a large number of our most prominent citizens and horse-owners, and all manifested the greatest interest in the doings of the professor. A horse belonging to the Omnibus Company,—a most vicious brute, with the habit of biting, and striking with his fore feet, and from which those in charge have not been able to remove the collar or bridle for over three months,—was brought for treatment. We understand, by the way, that this horse (a large and powerful bay) once killed a man by biting and trampling him under foot, and recently bit the hand almost off the person having him in charge. In about twenty minutes, in the presence of between two and three hundred persons, Mr. Magner reduced this brute to perfect subjection, so that the groom and himself harnessed and unharnessed him, put their hands in his mouth, and

handled him in every shape with perfect impunity, the former furious beast being as docile as a kitten. It was a wonderful exhibition, as we can bear testimony."—*Buffalo Commercial Advertiser.*

"*Buffalo, Dec. 21, 1869.*

"PROF. MAGNER, *Dear Sir:* I consider myself in duty bound to drop you a few lines respecting our once vicious horse, 'Man-eater,' as we called him. I have often said, What a good thing it was we did not *shoot* him. He was taken out of the stable twice for that purpose, when I, on both occasions, interceded in his behalf. He is now one of our *best horses*, as docile as a lamb, and all the drivers like him. We work him double or single, as required. All this was caused from your few minutes' tuition. You are aware of his past history. For months previous to making your acquaintance, we could not get a man to harness him, and two of our drivers were disabled by him. When you visit our city, please give us a call.

"Believe me, yours very truly, M. FORD,

"*Agent Buffalo Omnibus Co.*"

CASE 4.—OXFORD HORSE.

This case is included for its remarkable peculiarity of character, the writer having found no parallel to it in all his experience. The horse was seven years old, and was owned by a hotel-keeper in Oxford, Miss. He was remarkable for his extreme sensibility, courage, and fine form. Although perfectly gentle to handle or approach, he would not bear the least abuse or excitement. Being a fine saddle-horse, he could be mounted or dismounted in a building, but not outside the building with safety. If an effort were made to lead, mount, or dismount him outside of the building, he would jump and pull away, striking and jumping with such fury as made him not only unmanageable, but really dangerous. As an illustration of his sensitiveness, the owner stated that once, desiring to shoe him, he was ridden to the blacksmith's, but refusing to go in, he was struck upon the shoulder with the end of the bridle-rein, and spoken to sharply. The result was, he took such a dislike

to the blacksmith's shop that he never could be ridden near one afterward, and was shod in his stable.

Two traveling horse-taming parties, at different times, had visited Oxford, and tried their skill upon this case, both making a disastrous failure. When I visited the place, it was made a condition of success that this horse should be led, mounted or dismounted, in the street. And so it became a matter of either giving up the town, or taking him in hand. I never had jumped a town for any such cause, and concluded I would not now. As a matter of experiment, I put on him two War Bridles, with over fifty feet of cord to each, and with the aid of a strong man led him out of the barn, when such a desperate struggle commenced, he to get away and we to hold him, as was, perhaps, never seen before. The moment he was outside he rushed forward, but being restrained, he lunged into the air more than fifty times, when we were glad to end it by running him into the stable as quickly as we could. Explaining to the class that he could not be successfully treated in a barn, he was mounted and ridden to a field a mile outside the town, followed by the class. The halter was now put on outside the bridle, and while still mounted, the rider ready to jump off, the hitching-strap was cautiously tied to his tail. When ready, the rider instantly jumped from his back, when he commenced the most violent struggle to free himself. As he went round with great rapidity, he struck and kicked with intense fury. When entirely helpless, he was quickly untied, the treatment reversed, and carried to the fullest extent to make him submit.

FIG. 286.—Oxford Horse.

The first form of War Bridle was now put on, when, on his being untied, I instantly took him off his feet sidewise, following up so sharply that he could not resist, when he finally submitted to it. The experiment of mounting him was now made, but he resisted so violently by wheeling, jumping, and kicking, that the rider barely escaped being killed. He was again subjected to general treatment, which was carried to the utmost extreme of its power. The precaution was now taken to mount him while tied. This was successful, and he was soon made to stand gently to be mounted or dismounted while the head was free. On the way back to town, the better to test him, and fix the impression, he was frequently mounted and dismounted. Upon arriving at the public square, these tests were repeated, and the horse led to the stable. This case caused me a great deal of anxiety, and it was only by the most careful management that it was made so decided a success.

Case 5.—Hermon Horse.

This horse was a seven-year old thoroughbred stallion, owned in Hermon, N. Y. He was a bright bay, had a good head, was finely formed, and looked very much like Cruiser. He was raised in Canada, and according to report had killed a man there. He had not beeen broken to harness, and was kept shut up, and considered a very difficult and dangerous horse to break.

When I was advertised at Hermon, it was insisted as a condition of making a class that this horse be subdued and driven in harness. I was unable at the time to obtain any particulars about the horse, further than that of his being a wild, unbroken stallion,—a regular "man-eater." I had but one clue,—he was a thoroughbred, and such cases, no matter how vicious, I always found the best, or rather the easiest, subjects to subdue. This influenced me to strike

boldly for a large class, promising every man his money back if the horse could not be made perfectly gentle to drive in harness in forty minutes. Being compelled to work in a barn, which was entirely unsuitable for such an experiment, the treatment had to be limited to Second and Third Methods, the Third being depended upon the most. He submitted to treatment in about thirty minutes, and drove to harness with entire success. Considering the previous character of the horse, the success of the experiment was really remarkable, and far better than was expected by any one; still there were a few jockeys who were bound to find fault. They claimed that the horse would not stay broken, and offered to bet $100 that he could not be handled or driven the next day. This I promptly met by offering to put up $500 against it that it could be done in a week from that time, when they backed down.

Two days later, on my arrival at Russel, eight miles distant, I found the people had been so prejudiced by the parties named, that it was necessary to make a special effort there. To counteract such an impression, which I knew would spread and destroy confidence in my work, I telegraphed the owner to bring the horse there at my expense and risk, which he did, leading him behind an open buggy. Upon testing him, which I did carefully, I found him perfectly gentle, hitched him before my buggy, with the breeching-straps loose, and drove him up and down hill, and through the streets generally with perfect satisfaction.

Case 6.—Wilkins Horse.

This is in some respects one of the most interesting cases which has been referred to, on account of the peculiar character and notoriety given him by the conditions of his subjection by me (specially referred to in Personal Experience, page 511). The last effort to break him

was two months before my visit there, when he was brought to a pretentious horse-tamer, with orders to break or kill him; but after a week's continuous effort, he was pronounced as "having no brains," and impossible to subdue. As a test experiment, he was controlled by me in about thirty minutes, in the presence of the owner and Mr. Bonner, in the last-named gentleman's stable.

He was a well-bred trotting horse, nine years old, a bright bay of medium size, quiet and gentle ordinarily, but when excited by being touched or handled, he would kick and strike with great violence. Touching his nose or head would cause him to strike like a wild mustang, while to touch his feet, or to attempt to take them up, would make him kick desperately. A singular characteristic in this case, rarely to be found among domesticated horses, was, that if irritated he could repeat the resistance, if he tried, a thousand times in succession; there seemed to be no let-up to him. When studied carefully, at such a time, it would be seen that the expression of the eye indicated the untamable nature of a wild animal. In moving, his tread and actions seemed to be like those of a cat. While standing, he would, without moving, or changing the position of his ears, out of the corner of his eye watch every movement, seemingly listless, but ready at any moment to strike or kick. He had in fact the true mustang nature, with any amount of endurance, and was treacherous to the last degree.

This horse should have been subjected to the Second Method, which would have made his control simple and easy; but the circumstances under which I was led to take him in hand compelled me to handle him in a box stall, and consequently I was limited to the Third Method, which was not in reality at all adapted to his case, and I barely succeeded with it. I have repeatedly stated that this

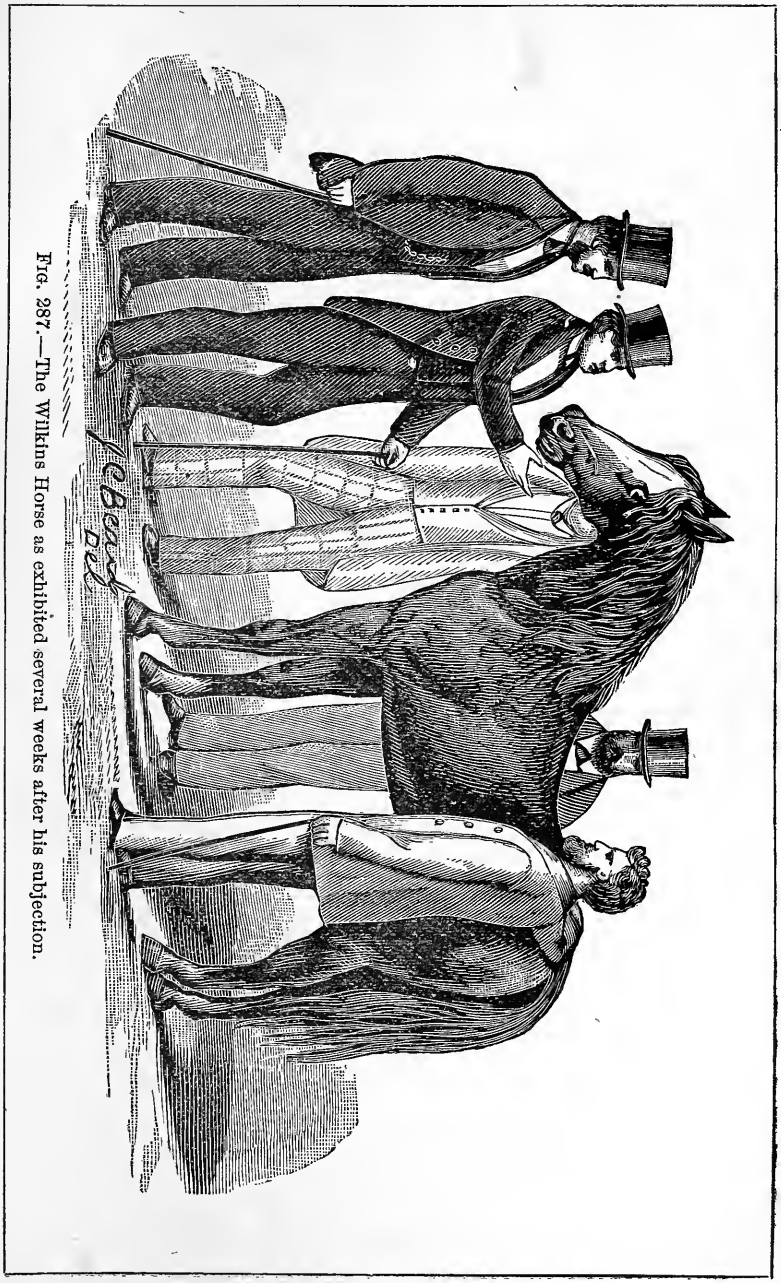

FIG. 287.—The Wilkins Horse as exhibited several weeks after his subjection.

method must not be used when the character is such that there is inclination to bite the cheeks or lips, or when the head is interfered with, as there is then an inclination, as in the mustang nature, to strike, and the treatment will be difficult to apply. In this case the result was that both cheeks were badly bruised,* making him again very violent until cured, when I applied the Second Method, subduing him in about twenty minutes.

Fig. 288.—Wilkins Horse.

I afterward gave exhibitions of his good character in the presence of Mr. Henry Bergh, Esq., President of the Society for the Prevention of Cruelty to Animals, and other well-known gentlemen, when he was turned loose in the ring without anything on him, and submitted to handling with the docility of any gentle horse. This was one of the few exceptional cases that the most patient and kind treatment would have no effect upon. As an illustration, Dr. Braily, formerly Chief Veterinary Surgeon of U. S. Cavalry, a man of exceptionally large experience in handling horses, tried for over an hour, by scratching the mane, etc., to get his hand upon a certain part of the head, without being able to do it. He had claimed that there was no living horse whose head he could not in time by this method lay his hand upon. I told him it could not be done in this case; if it could, I would give him one hundred dollars; that the only way it could be done was by proper subjective treat-

*Proper treatment for such cases will be found in Medical Department.

ment. As explained, he made the experiment, and failed completely; yet in about fifteen minutes' treatment, I made the horse stand gentle and allow his head to be rubbed or caressed in any manner. In these as well as in all other conditions of resistance requiring coercive measures, kind treatment, as repeatedly explained, is to be depended upon as an aid in fixing and holding the character good.

Case 7.—Hillman Horse "Jet."

When the facts of this case are considered, it must be accepted as by far the most remarkable as well as interesting case yet referred to. He was a young stallion out of one of the best trotting horses in the State. He was but little over three years old, and of beautiful form. Notwithstanding the conditions of his treatment were of the best character, when but little past two years old, in defiance of all that could be done, he developed such an extremely vicious character as to become at once wholly uncontrollable. The circumstances under which I was induced to experiment upon this horse were as follows:

In the early summer of 1875 I made a chance visit to Portland, Maine, where I had previously been in 1863, as explained in Personal Experience. Meeting Dr. Tewkesbury, a leading physician and prominent citizen of that city, he said: "There is one of the most vicious young stallions here that has ever been known in the country, one of the worst brutes that ever lived. He is shut up in a building to prevent his injuring or killing any one. He nearly killed one man, Eben Howe, and seriously injured several others. If you can subdue him, you will prove your ability to subdue any horse, and show that you are the greatest horse-tamer in the world."

As he could give no particulars of the disposition, and

being there on business with no time or inclination to give the matter any serious consideration, I soon after left for the West. A few weeks after, I received a letter from Rev. A. P. Hillman, the owner, asking whether such a horse could be broken; saying that unless I could come there and break him, he must be shot. I wrote him that I intended to visit Maine the following spring, and from the explanation given of the horse, I thought I should have no difficulty in his subjection. I advised him not to allow the horse to be annoyed or molested in any way, to give

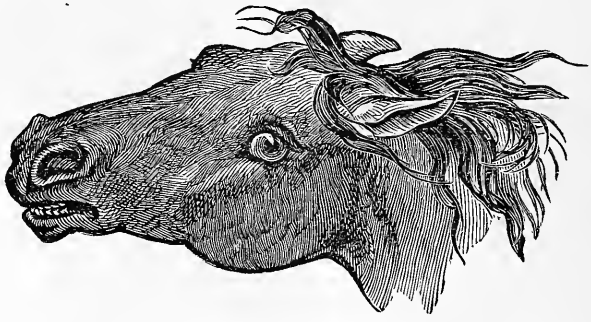

FIG. 289.—Hillman Horse "Jet."

apples, etc., occasionally. Upon arriving in the State in the following spring, I went to see the horse privately; and upon a careful examination, concluded I could not prudently experiment upon him before a class, and so announced I would take him in hand immediately after the close of the season's business, at which time I went to Portland for that purpose. Desiring to make the experiment a perfectly fair one, I appointed a special committee of three leading citizens to invite a few representative horsemen to be present to witness his subjection. It being feared by those interested that I would play some underhanded game, giving the horse medicine, or something that would control him for the present, a special committee was

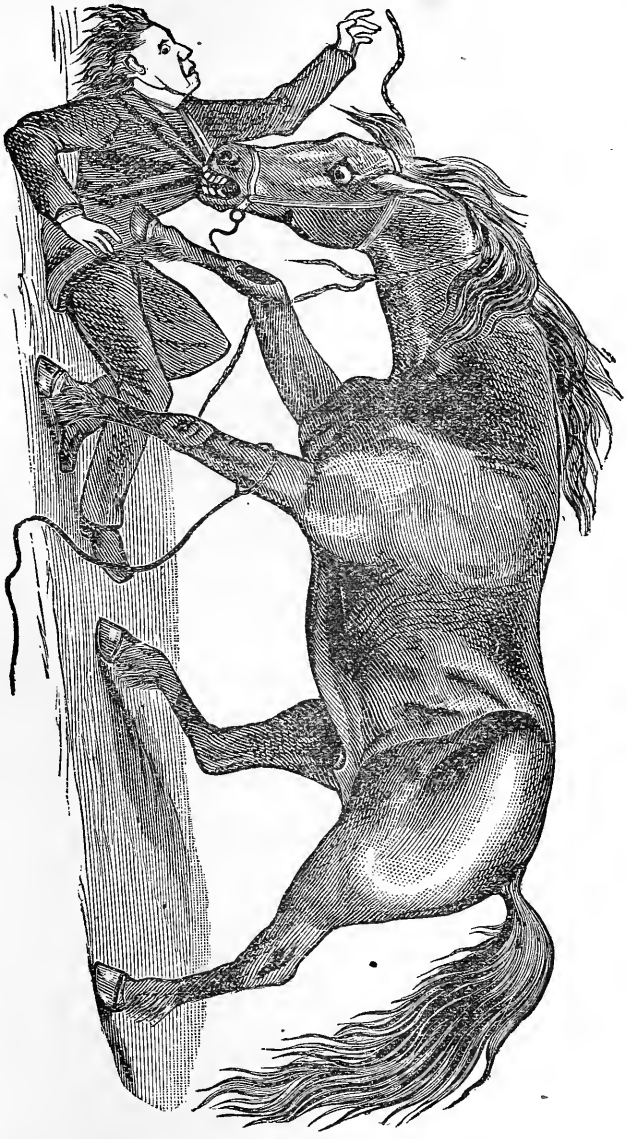

FIG. 290.—As "Jet" nearly killed Mr. Eben Howe before being subdued.

appointed to accompany me from the time I got up in the morning until the horse was brought forward for treatment.

The real difficulty in the management of this case was in getting to him safely, and taking him from his stable to the place of exhibition. This, however, I was fortunate enough to do without accident. Knowing by his tempera-

Fig. 291.—"Jet" as led into Portland before being subdued.

ment that the First and Second Methods would have but little if any effect upon him, I determined, as a matter of experiment, to try by the Second Method to influence him sufficiently to enable applying the Third safely, but failed. He was so sullen that he could not be made to turn sufficiently fast to affect him. It being entirely unsafe to give his head sufficient freedom while upon his feet to apply the cord, he was thrown down by First Method. As

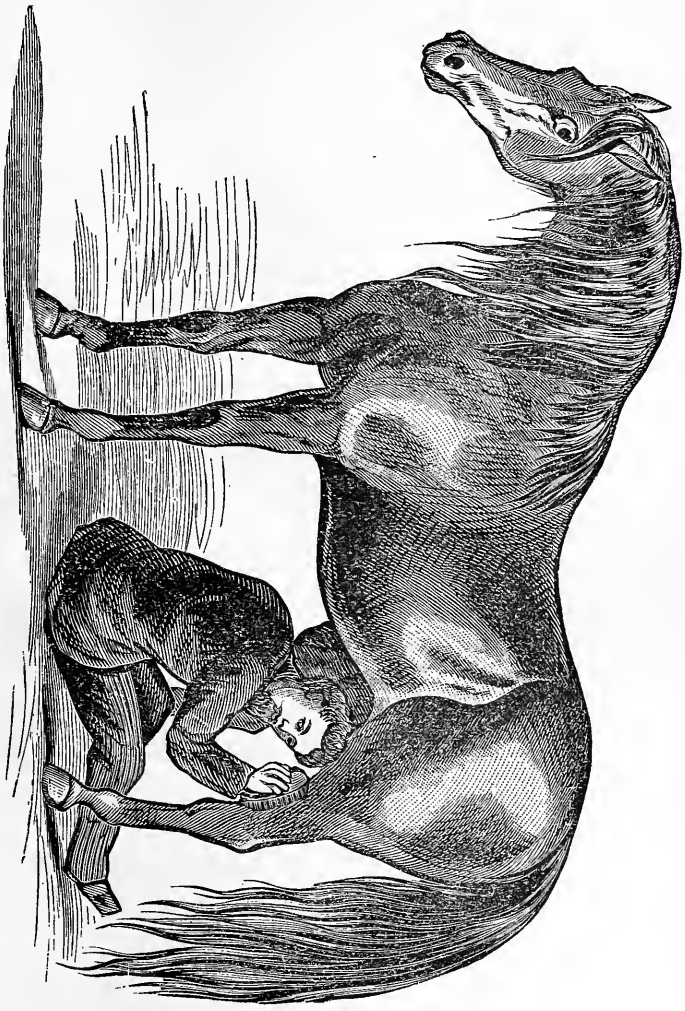

FIG. 263.—"Jet" after being subdued.

expected, he did not resist it, proving it entirely powerless in his case as a method of subjection. He was subjected next to full pressure. For full fifteen minutes his resistance was desperate, running, jumping, and throwing himself, when he finally ceased all resistance, and in twenty-four minutes all pressure was removed. He was now hitched up and driven perfectly gentle, after which he was turned loose in the midst of the crowd, with not even a halter upon him, and proved perfectly gentle and safe. He was then taken charge of by a good practical horseman, Mr. Robinson, whom I charged to treat the horse with the most perfect kindness and care, and to go to his stable a dozen times a day, rub, caress, give apples, etc., which instructions were carefully carried out.

On the following Monday, as a matter of precaution, he was subjected to the Second Method, to which he now responded promptly, after which he was harnessed and driven for about two hours. A week afterward, as previously advertised, he was taken into the street in front of the Prebles House, unharnessed, led around, and shown to be as gentle as any ordinary driving-horse. Two weeks afterward, on the 4th of July morning, he was driven by me in a street procession, proving one of the safest and gentlest horses in the crowd.

After the subjection of this horse, a chance occurrence nearly destroyed the good effect of all I had done. While the horse was standing with a crowd around him, I was called away for a moment. I was scarcely outside the building when I heard a great uproar inside. I went quickly back, when the sight that presented itself was most startling. The horse which I had left there so quiet and gentle was now under the greatest excitement, running from one side of the building to the other, with head up and eyes flashing fire, the people panic-stricken, and every

man running for his life, and climbing up the sides of the building for safety. The better to understand the condition of things, I will explain that the experiment was made in a building about 75x100 feet in dimensions, that had formerly been used for a riding-school. Back of this was a stable running across the entire breadth, with an open doorway about ten feet wide between. In this stable were standing about twenty horses. While I was out, he suddenly became conscious of the presence of these horses, and went racing around trying to get to them. When I reached the door, I saw at once that he must be caught instantly, or the effect of the treatment would be entirely destroyed. In addition, should he get into the stable behind me, the result would be very serious. Keeping between him and the horses in the opposite stable, I ran quickly forward to his shoulder and grasped the mane firmly, and as he ran along, passed the other hand down over his nose and succeeded in stopping him. Three times he broke away, but by great effort I regained my hold. His old nature was fast getting control of him, as several times he tried to reach back and bite my legs, and I saw that I must get him under control quickly, or run. The fourth time I held him, and ran him into a corner against the wall, where was a high manger. While holding him, I induced a man who was standing upon the manger trying to get away, to put on the halter, which was with some difficulty done. With this once on, he was immediately as docile and quiet as if nothing had occurred.

This incident, trifling as it may seem, caused me as much anxiety as taking him out of his stall a few hours before, but occurring without accident, it passed off without a comment. To show the great interest with which the subjection of this case was regarded, I include a synopsis of editorials from the press of the city, also an article from Mr. Robinson, a well-known citizen:

"Horse-Training—Wonderful Performance.

"The announcement that the well-known Hillman horse was to be trained at the South-street stable drew a large crowd yesterday morning, as this horse is known to be one of the worst cases on record. Some few gentlemen, including representatives of the morning papers, took carriages, and drove out to the residence of Rev. A. P. Hillman, near the Reform School, to see Professor Magner in his first attempt to handle the animal. . . .

"Last September he was placed in a large box-stall, and had not been taken out until yesterday morning. . . . In this condition Jet was led from the stall for the first time in eight months. The line of march was taken up for the city, a man on either side holding by the cords attached to him. All the residents on the way were in waiting to see the wonderful horse pass, and on reaching the city a large crowd followed the horse and his trainer to the stable.

"The stable was thronged on the arrival, and after giving the horse a slight rest, Mr. Magner commenced upon him. We cannot give the method of training, for it would be telling the secret by which he governs horses. Suffice it to say that in just twenty-five minutes the striking, dangerous horse was as mild as a lamb. He was turned loose, and wandered about among the horsemen as though he were an old truck-horse. The trainer jumped upon his back, and afterward harnessed him to a wagon, and drove about without the least strap to keep the wagon from striking his heels. The gathering was composed almost exclusively of horsemen, and each and every one of them pronounced the horse under perfect control, and they voted the professor a vote of thanks."—*Portland Press.*

"'Jet' Conquered. An Interesting Exhibition of Horse-taming.

"When Magner first entered the stall, the demon in the brute showed itself in the most striking manner by frantic efforts to seize him with his teeth, rushing around his narrow quarters like a caged tiger, while the red flash of his wild eyes would have deterred many strong men from approaching him. But the professor paid little heed to the wicked manifestations of this modern Bucephalus, and, taking advantage of his quiet seconds, firmly secured his head with cords, slipped a large hood over his head; and thus blindfolded and fastened in the strongest possible manner, handsome 'Jet' was led in triumph to the city, and taken to the old riding-school on South-street, arriving there shortly after 9 o'clock. A large number of people interested in horses, including

nearly every physician in the city, were assembled at this place; and, on the stallion's arrival, many were the comments on his remarkable beauty of form and color, as well as the strength and supple grace which every movement revealed.

"At 10 o'clock Professor Magner cleared the place of all spectators excepting those holding tickets of invitation from the committee having charge of the exhibition, and proceeded to carry out the promise of his circular.

"Of course, the peculiar method by which, in a wonderfully brief time, one of the most savage stallions in the State was so completely conquered that he was harnessed to a carriage and driven around the enclosed yard, fast or slow, as suited, as well as backing, stopping instantly at the word, 'Whoa!' besides various other things,—all proving that the demon had been, temporarily at least, exorcised,—cannot be stated; but it was surely done."—*Portland Argus.*

"SKETCH OF THE NOTED HILLMAN HORSE, 'JET.'

"BY C. G. ROBINSON, ESQ.,

"*Who took charge of him after being subdued.*

"I have known 'Jet' since he was foaled. He has been known as the finest and most promising colt of his age in the State, being of the best trotting blood. He has attracted the most widespread notice for his remarkable viciousness. He would look at a man pleasantly, yet bite, strike, or kick, as soon as within reach, and would fight as coolly and desperately as a bull-dog. If he could not reach the person with his fore feet or mouth, he would wheel and kick with the quickness of a mule. Any one having a little experience with him once, let him alone afterwards. When but eighteen months old, he was taken for exhibition to the Lewiston fair. It was with great difficulty that he was taken out after standing in the car two days, and he was not, in consequence, entered for competition. His exploits at this age were numerous. For instance, a horseman who did not *fear any horse*, could not be prevailed upon to keep away, and, though warned to keep out, incautiously stepped into 'Jet's' department; when, quick as a flash, upon getting near enough, 'Jet' cornered and crushed him under his feet with mouth and hoofs. When that man was rescued, which was with great difficulty, he needed no more admonitions to keep away. At different times foolhardy individuals were cornered in this manner at Lewiston; and each time the horse had to be clubbed to rescue them. Though notoriously vicious, being remarkably fine in form and action, a great effort was made to use him for breeding. He was put in the care of Mr. Jacob Bailey, of Hiram, a horse-breaker who was highly rec-

ommended in the language, 'If he cannot break him, no man can.' Mr. Bailey had him but a short time, when he wrote the owner that he could not manage him at all, and that he must take the horse away; in fact, the horse came near killing him. Then a Southern colored man, who had been used to taking care of blooded horses in the South, was recommended very highly to take him, and was employed by the owner. He had him but a few days before he was beaten. Then, with much difficulty, with strapping and binding he was carried to Portland. In leading him from the cars to the stable, he got the man under him, who was rescued with difficulty from his ferocious fury.

"Mr. Richardson and Eben Howe, two of our most experienced and successful horsemen, now took him in hand. They attached ropes to his feet and head, tied up one foot, taking every precaution they could, and undertook to lead him to his owner's stable between them. In his efforts to resist, and of the men to hold him, Mr. Richardson's rope broke, when the horse at once jumped for Mr. Howe, catching him by the breast of his thick overcoat, lifting him from the floor as if only a mere toy (Mr. Howe will weigh about 180 pounds), threw him down, and came down upon him with his knees, holding his grip with the tenacity of a tiger (Mr. Hillman's words). Mr. J. Jewell, stable-keeper on Centre-street, grabbed a hay-fork and hit the horse three times heavily upon the back of the head, while another man hit him in the same place with the butt of a heavy black whip; but his grip was only loosened by thrusting the fork-handle between his jaws above the nippers, and thus his mouth was pried open. Mr. Howe was so seriously injuried that he was unable to attend to his duties for a long time; indeed, it was regarded fortunate, so bad were his injuries, that he was able to regain his health even then.* By being tied and hampered in the most effective manner that skill and ingenuity could suggest, he was led to Mr. Hillman's place in Cape Elizabeth, where he was kept confined for nearly nine months, until taken out two weeks ago, and subdued in the presence of our leading citizens by Prof. Magner. Such is but a brief outline of the character of this most remarkable horse. It is admitted by all that he was the most vicious horse of any age ever known in this country."

Case 8.—Norwalk Horse.

This case is referred to mainly to show the value of proper treatment. When at Norwalk, Ohio, I had a large

* Mr. Howe was present at the time of "Jet's" subjection, and was still an invalid from the effects of his injuries.

class, and among other interesting subjects brought in for experiment, was one having the following history :—

A gentleman in the place raised a fine, four-year old colt. In trying to break him, he took to kicking and running away. Several horse-breakers tried to break him, but failed. The last trial was made by two horse-tamers, who, after working upon him two weeks, not only utterly failed, but injured him seriously by their severe treatment. Upon my arrival there, he was about seven years old, and had been running loose about two years.

This horse was medium sized, well bred, very intelligent, and naturally easy to manage, but had been made vicious by ignorant, abusive treatment. The owner brought him on condition that I should break him. Upon looking him over, I stated to the class that there would be no trouble whatever in breaking this horse, that he was one of the best subjects yet brought in. He was subjected to First Method, to which he yielded readily. But as a matter of precaution, he was subjected afterward to Second Method, when he was put in harness and driven gently without further treatment. Next day at one o'clock, as previously announced, he was driven without breeching through the streets. Though going at a fast trot, and distant fully six or eight rods, he could be stopped or started by word of command. He was afterward used as a family driving horse.

Case 9.—Allegan "Man-Eater."

In explanation of this case, I will include statements and reports published at the time.

"The Allegan 'Man-Eater,' the 'Cruiser' of America.

"Science vs. Strength.

"About the first of January last, Prof. Magner came to this place, and opened an amphitheater for the training and subjugation

of wild and vicious horses. At first his claims were looked upon with suspicion and distrust by horsemen and the public generally; and only after the most exhaustive and convincing proofs of his truly wonderful nerve and skill were exhibited, was he enabled to establish himself in their confidence.

"From here he removed to Plainwell, where he met with still greater success, receiving a public testimonial signed by one hundred and fifty of the leading citizens of that place. But it was reserved for Allegan to bring a final test-case. A horse by nature of the most desperate and vicious character was brought in. He had previously killed one man, and crippled several for life, and severely injured many others. He had been owned by Dr. Way, of Otsego, an accomplished and skillful horseman.

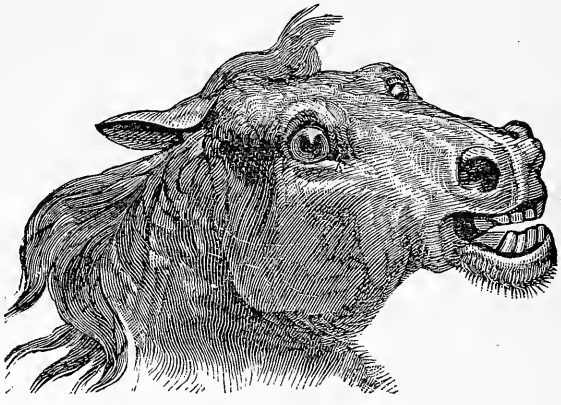

FIG. 293.—Allegan "Man-eater."

"When brought into the ring, the horse exhibited all the *peculiar* traits of his character: his eyes became bloodshot, and gleamed like balls of fire, he sprang at his trainer like a wild beast, biting, striking, and kicking in the most determined manner, breaking the ropes and stakes, springing upon the seats and throwing them down, tearing pieces from the center-pole with his teeth, lunging at any person who met his eye, actually screaming with rage when foiled in his attempts to seize his intended victims. Nearly every person was driven from the tent, some in their haste tearing holes in the canvas and escaping through the roof. It was a truly exciting and desperate struggle of science against strength, which lasted for full three hours, when the fury of the beast gave way before the superior intellect and science of man, and the horse became perfectly docile, allowing himself to be handled with ease and safety, triumphantly vindicating the truth and practicability of Prof. Magner's theory. The next day the horse was handled

by strangers with perfect safety, and driven upon the streets. Altogether, it was one of the most remarkable cases ever witnessed in this country, as he was in all respects as vicious as the noted English horse *Cruiser*. We do not write this as a puff, but to illustrate the perfection to which the science of horse-training has been brought by Prof. Magner. Many of our citizens who failed to attend his lectures here, are now regretting not having done so. His great success recently in New York, where he is indorsed in the strongest manner by all the best horsemen, including Mr. Bonner, Mr. Bergh, and even the clergy, proves him to be a man of real merit ; and were he to come here again, we predict for him a flattering reception."—*Kalamazoo (*Mich.*) Gazette.*

"His History (by Dr. Way, who Owned Him, and whose Brother He had Killed), which was Requested by the Class for Publication.

"The 'Updike Horse,' better known as 'Man-Eater,' from his remarkable viciousness, was out of the Canada horse 'Lyon' and a Messenger mare. He was a wonderfully wild colt, and would kick and strike at any one who approached or annoyed him.

"When three years old, he was caught with a lasso for the purpose of castrating him. In the attempt to do so, after being confined, he broke the ropes by which he was tied, and got away, and it took several men with horses nearly all day to catch him and complete the operation. It was found impossible to take the sticks off next day, and he was allowed to run, to die or not, in consequence. He ran wild afterward until five years old, when he was sold to Nathan Austin, who, after being seriously injured by him, succeeded in getting him in harness to plow by the side of a gentle horse, and plowed him all day with one of his fore feet tied up, notwithstanding which he would kick and strike next morning as bad as ever.

"By long-continued, severe, exhausting work of this kind, he finally could bed him down in stall and handle him a little.

"Mr. E. Higgins got him next. In his efforts to drive him, he kicked himself loose, destroying the wagon, and defied for a long time the utmost efforts of three men to catch him, and after being put in stall no one dared to approach him. In two weeks he was sold to Mr. Lewis Hadden, from whom he got away in the attempt to drive him, and it was with the greatest effort that he was finally caught ; and after the most violent effort could finally be handled by Mr. Hadden, but by no one else. He kicked and nearly killed one of his boys, and he sold him to John Hogle. In a short time he became so vicious that he could not be let out of the barn or approached.

"A company of horse-tamers next agreed to break him. They succeeded by a lariat rope in getting some of their rigging on him, but he soon was loose, kicking and running in the street with a number of ropes, etc., attached to him. After a great effort, and taking nearly all day, he was caught. They promised to break him next day, but that night they left, leaving their ropes and straps on the horse.

"I bought him next. He was very poor and weak, and I put him in the barn, did nothing to aggravate him, tried to give him some oats in a dish, but he kicked and struck at me. I kept trying him in this way for several days, until I could approach and handle him a little. In the attempt to drive him in double harness, he kicked himself loose, breaking the wagon to pieces.

"About a month after this he struck and kicked me, and I only saved my life by *rolling under the manger*, where I had to remain until relieved by neighbors. He would now kick or strike any one approaching him, injuring quite a number, one man from Kalamazoo getting three ribs and one arm broken by him. He kicked and struck my brother when he was attempting to feed him, not only killing him, but in his fury literally mangling his body by striking and kicking it about in the stall.

"After this he was not approached or touched by any one for several weeks.

"Another party of horse-tamers next took him in hand, and after working with him for two days, could not do anything with him—not even put a blanket on him, or take their ropes off. After leaving my hands, at least a dozen horsemen and horse-tamers tried to break him, and all failed, and he was recognized and became known as the most dangerous and vicious horse in the State, if not in the country.

"He has been driven every day since you handled him (one week). He is not in the least injured, and continues as gentle and manageable as he was the day you handled him.

"It is needless for me to say that all your class here wish you the greatest success in your humane efforts. All would be glad to have you come back. I am, with great respect,

"A. B. Way, M. D.

"*Otsego, Allegan Co., Mich.*"

All the methods of subjection were used upon this case to their utmost limit, without any restrictions as to injury, as the horse was considered worthless, the question of interest being, Can the horse be subdued?

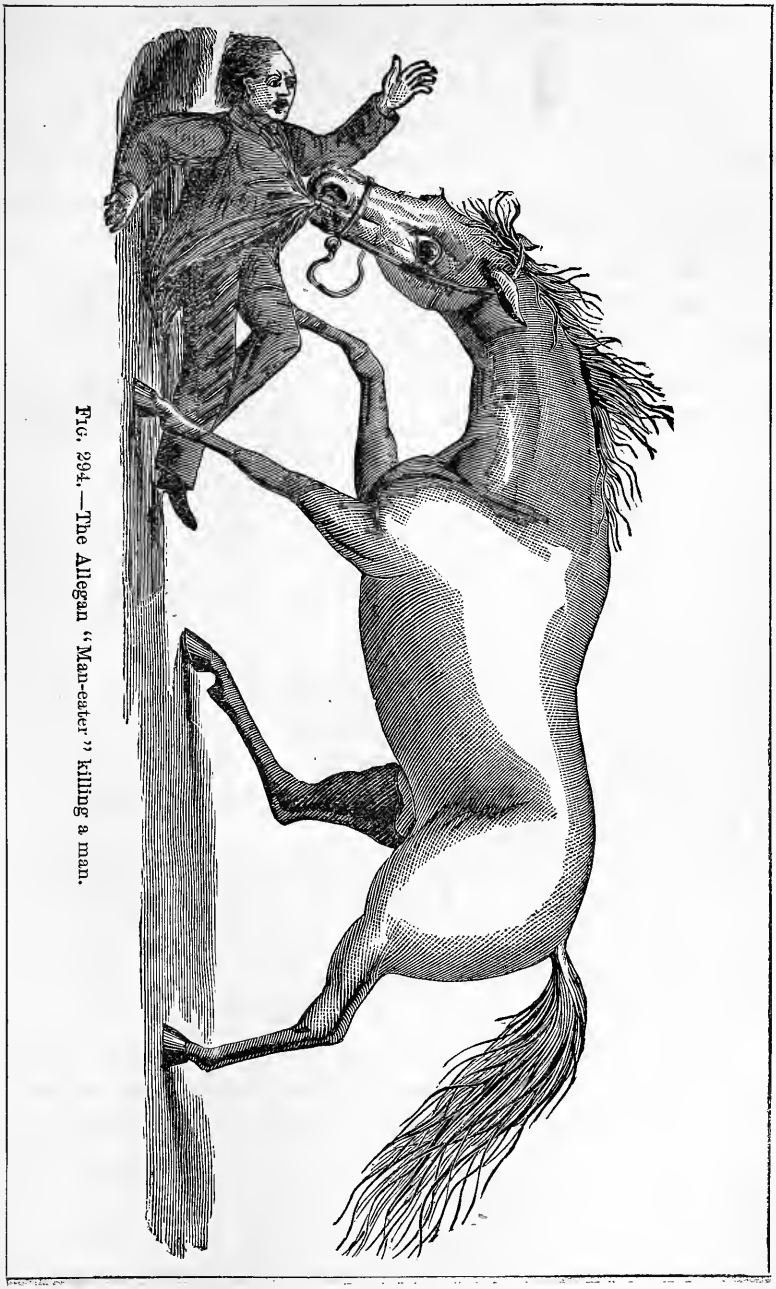

FIG. 294.—The Allegan "Man-eater" killing a man.

Case 10.—Roberts Horse.

I include this case because it was the first really vicious stallion subdued by me; also to show the bad effects of rough treatment, and the facility with which a horse that has been even very vicious can be made gentle when the treatment is right.

This was an "Ethan Allen" stallion, about eight or nine years old, owned by a gentleman named Roberts, in Utica, N. Y., at the time supervisor of the fifth district of that city. The horse had previously been of such good character that he was used as a family driver. A groom in the habit of drinking occasionally, was employed to take charge of him; and to make him show up, was in the habit of whipping him until he grew vicious and got to fighting. The owner, hearing of this, discharged the man, and took charge of the horse himself; when, the first he knew, the horse pitched suddenly at him, biting him, and undoubtedly would have killed him had not two men who happened near driven the horse off with rails.

Fig. 295.—Roberts Horse.

When I visited the city, the horse had been confined to his stall for seven months, fed through a hole or window in the wall, it not being considered safe for any one to go near him. In consequence of his serious injuries, Mr. Roberts was yet confined to his room, a helpless invalid. As a condition of doing anything there, the citizens insisted that I should first subdue this horse. Consenting to make

the experiment, I was accompanied by the Butterfield brothers, one of them proprietor of a large livery stable, the other better known as General Butterfield, Mr. Golden, a well-known merchant and horseman, and the reporters of the *Telegraph* and *Utica Herald*, to Mr. Roberts' residence in the upper part of the city.

When these gentlemen saw the vicious character of the horse, fearing I would get injured and they censured for it, they unanimously requested that I would have nothing to do with him, saying that if I would not, they would do all they could to help me form a class. I told them to borrow no trouble about me, to keep out of my way; that the experiment must now be made, and I would take care of myself. I was fortunately able to get the horse out of his stall without serious difficulty, and into a small yard or open wagon house, on one side of which was a loft or haymow, where the gentlemen named seated themselves, beyond the reach of possible harm. It is necessary to explain here that at this time I had no well-defined theory of management, simply doing the best I could to adapt my efforts to the control of such cases as were brought me for experiment. Usually I succeeded fairly, sometimes quite flatteringly, though not unfrequently, when compelled to take some exceptionally bad case, I made more or less failure.

I had repeatedly heard of this case, but was cautioned by friends to have nothing to do with him. But having a desire to see the horse, and not knowing just how to proceed, I was betrayed into the promise of taking him in hand; and once starting in the matter, I was bound to go through at all hazards. Still I made no special preparations, and in fact had with me but a simple War Bridle cord. Having the horse out in the yard, as stated, controlled by two long ropes fastened to his bridle and held by myself and assistant, the question arose in my mind, What shall

I do next? I could not safely let go or put on any rigging. In fact, I had none. Without stopping to consider, I resolved to take the only chance open for me, that of combating him in the most simple and direct manner. He was a wonderfully quick, energetic fellow, and just as vicious as he was quick, having no idea but to jump at a man. Should I succeed, his control would be simple and easy, whereas if I failed I should be completely helpless and in his power, the result of which would be serious if not fatal to me. A supreme effort was my only chance, and I prepared to make it. I took as short hold of the rope as I could with safety, measured the chances, and said to the other man, "Let go." The moment the horse was given freedom, he jumped for me. At the same instant I sprang for his tail, which I was barely able to catch and hold. The struggle now was for me to hold on and keep upon my feet while going around rapidly. I barely succeeded, soon making him so helpless that I could safely let go and reverse a few times, after which I quickly put on the War Bridle, and made him feel all the power I could exert with it. The whole time of doing this was not more than five or six minutes, when he became completely docile, following me around and allowing me to handle him as I pleased. I now advised that he be treated kindly, given apples, petted, and put to work. He was driven almost daily afterward, while I was in the city, by members of the family, proving as safe and gentle for use as he was in the first place.

When I look back upon this experiment, and consider all the circumstances, I regard it as one of the most successful I ever made. It was, at the same time, so foolhardy that after mature experience I would have hesitated long before taking such a risk. It would be simple and easy enough in ordinary cases; but when the horse

is extremely vicious and quick, there are two sources of danger: First, of being kicked while catching the tail, on which account it cannot be safely attempted with mustangs or horses of this character; second, of missing the tail, or of inability to run fast enough to keep up with the horse in his rapid circular motion. In which case there would be no alternative but to let go or be dragged under the fore feet. In either case, should the horse be really vicious, as in the present instance, I would have been brought within reach of his mouth, helpless to resist his biting or striking, which would be extremely perilous.

Case 11.—Mustang Pony.

The question is frequently asked, Can any horse be subdued? Practically there is no horse that cannot be subdued; but I will refer to a case, the only one I ever found, that would not yield to treatment, though I am convinced that with time and proper opportunity there would be no real difficulty in making even this case manageable. Two years before my visiting the northern part of New York, there had been shipped into that part of the country seven car-loads of wild mustangs. Two of these ponies, up to the time of my coming, could not be broken, and one of these is the subject referred to here. At North Lawrence I had for subjects a six-year old, runaway, kicking mare that had not been harnessed in two years, and a cream-colored mustang pony. As was often the case, there was nothing said about the bad character of this pony, but there was something about his appearance that I could not understand, and had never seen in any other horse. He crouched up in a corner, apparently indifferent to all around him, his head down, and his ears, which were heavy and long as a mule's, thrown back and out. His under lip was large, and hung down, leaving his mouth in appearance

partly open. The eyes were large, showing the sullen expression of a wild animal. A very noticeable feature was the extreme size of his nostrils. The fist could almost be put in one of them. An indifferent look at him would indicate a rather scrawny, low-necked, pot-bellied, dirty, long-haired fellow; but a closer examination showed wonderfully large bone and muscle for a horse of his size.

I stated there would be no difficulty in making the mare drive gently within fifteen minutes; but I did not know what I could do with the mustang, as he appeared to be one of the worst horses I ever saw, and not a suitable subject to experiment upon before a class. Upon trial, the mare submitted to treatment perfectly in about twelve minutes, was driven on the following day to the next town, and remained gentle afterward. Upon cautiously testing the mustang, he exhibited the most fearful resistance. If a stick were pointed at him, or he were touched in any part of the body, he would jump, strike, and kick several times in succession, then crouch into the farthest corner, rolling his eyes, snorting, and blowing like a bellows. He was with great difficulty subjected to Second and Third Methods, which were carried to the farthest limit prudent.

While under pressure, he would sometimes strike and kick desperately, then again stand sullen, doing nothing; finally seeming to submit, the moment the pressure was removed he resisted as badly as before. It was the same in relation to the Second Method; he would either go rapidly around a few times, or stand sullenly, refusing to go around, regardless of the most severe punishment, several times dropping down upon his belly; yet the moment he was free, he would fight as recklessly as ever. After bringing out his bad character, the owner stated frankly that the horse was really worthless, and could not be broken, and we were at full liberty to see what we could

do with him. Consequently it became a matter of considerable importance to subdue him, and the full force of treatment was used upon him for two hours, without seeming to have the least permanent effect.

It is proper to state that the First Method was not at all suitable for this case, as this class of horses, when the leg is tied up, will either throw themselves violently or drop down upon the belly sullenly, while the War Bridle would have no effect upon him. The better to explain his peculiarly lithe, desperate character, after being treated for nearly two hours, with one leg tied up, he dropped forward upon his head, turned clear over like a wheel, and came forward upon his feet, making a complete somersault without any seeming effort; and the next instant he jumped clear of the ground, struck, and kicked out furiously with both hind feet. I give a good portrait of his head, also an illustration of this remarkable feat, which was witnessed by the entire class.

FIG. 296.—The mustang.

He was several times brought under sufficient control to be harnessed in shafts and driven quietly for perhaps a minute, but with the first freedom he would fight back with the same insane fury as before. I made the statement that such a horse could not practically be broken before the class, and I doubted whether anybody could break him.

The owner, a strong, practical man, laughed, saying he believed he could break him, anyhow he should make a thorough trial; as much as to say, I will show you that I can break a horse that you cannot. Weeks afterward, he informed me that he made the most thorough trial, not only working with him for days, but actually almost starving him, without having the least effect upon him.

My time being limited, I could not continue the treat-

Fig. 297.—The Mustang in the act of turning over, as described.

ment longer. In addition, an indispensable condition of success was stopping when greatly excited, and repeating when cool, and treating him slowly in connection with the utmost kindness. But not being able to make a perfect success of the experiment, about half of the class demanded a return of their money, and received it. This made a good deal of stir and talk, as it was considered a great thing to find a horse that we could not manage; and I knew it would go like wild fire, and prejudice the people against me in that part of the country. I made a special request that all

present would meet me at the next town, and bring their friends with them. On the day following, there was a big crowd assembled, and evidently the tide of feeling was decidedly against me. It was my usual custom to simply explain what I could teach and do, then amuse the audience by the performances of the ponies, which was of itself one of the best illustrations that could be given, showing the value of intelligent treatment. But on this occasion something more substantial was needed, and I prepared myself for the emergency. I had the people assemble in a hall, and commenced by explaining the singular adaptation of the domestic animals to the wants and requirements of the people among whom they are found in the different parts of the world. I then referred to the different peculiarities of character common to each family or class, and followed by an explanation of the changes produced by chance causes, making the inference clear that exceptions were possible, either from a lack of intelligence or extreme wildness, which would make their training and management extremely difficult. I pointed to the fact that one of the horses treated the day before, and driven there that day by the owner perfectly gentle, was broken, as promised, by less than fifteen minutes' treatment, a horse that twenty-four hours before it was not supposed could be successfully managed by any man in the country.

I then took up the principles of subjection with their effects (as explained in this and in first chapter), and finally referred to the general success and appreciation of my efforts. All seemed to see the point, and I made a large class. Even those of the day before who took their money back, voluntarily subscribed anew. The result of this was an overwhelming success, and interest that was almost unprecedented in my experience throughout the country.

The other pony referred to was found a few weeks afterward at Brush's Mills, in the same county, where I had a large class. The case yielded to treatment in about thirty minutes, allowing himself to be ridden or driven gently. His subjection was so thorough that on the day following he was driven to a buggy to the next point of engagement, about eight miles distant, proving perfectly gentle and manageable.

CHAPTER XIV.

Denton Offutt, Rarey's Instructor.

After the information given me in relation to Mr. Rarey being instructed by Offutt, referred to on page 384, I called at the office of the *Turf, Field, and Farm*, and requested the privilege of examining the files containing the issues in which Mr. Offutt's book was published. This was kindly granted, and I read it through with great care. It struck me that the dialogue between man and horse, and the recipes for scents or drugs given for approaching and controlling wild or vicious horses, would be of interest to my readers, and worth preserving, so I determined to obtain the copy for publication, if I could.

With this object I called upon the chief editor, Mr. Hamilton Busbey, and placed the Rarey matter, before referred to, in his hands for perusal, at the same time stating my desire for the matter mentioned. During the conversation, he gave me the facts in relation to Mr. Richards' statement regarding Offutt and his instruction of Rarey, as follows :—

In October, 1877, he (Mr. Busbey) was dining with Mr. Keene Richards at Blue Grass Park, when the subject of horse-taming came up.* Mr. Richards stated that the founder of the horse-taming school was a native of Georgetown, Ky., and that his name was Denton Offutt. Mr.

*Keene Richards, Esq., a leading breeder and turf patron of Kentucky, died March 19, 1881.

Richards himself was a pupil of Offutt, whom he described as uneducated, but full of originality; that when quite a young man, John S. Rarey came to Georgetown and studied with Offutt, and later on practiced the system in Ohio, before going to England with Mr. Goodenough.*

The conversation was continued in the library, when Mr. Richards handed Mr. Busbey a book which Offutt had published for the benefit of his pupils, all of whom he pledged to secrecy.

Mr. Busbey was very much interested in the book, and carried it with him to New York. One day he let Mr. Robert Bonner have it to examine, and the next morning he received the following note from that gentleman:—

"There are many interesting things in Offutt's book, some things that are entirely new to me, and well worth copying. The dialogue between man and horse, beginning on page 37 and ending on page 46, contains the essence of all that Rarey ever taught. He evidently based his system on that."

Mr. Busbey, beginning with January, 1878, published the work of Denton Offutt in the *Turf, Field, and Farm*, and it attracted much attention. The dialogue, which I thought worth preserving, and which Mr. Bonner found so interesting, by the kindness of Mr. Busbey I have copied, and here present to the readers of this work.

Dialogue between Man and Horse.

"*Man.* I wish to put my hands on your face, and come near you.

"*Horse.* If so, you must let me see that you will not hurt me, nor will have anything about you that will, nor anything

* Of the partnership of Rarey and Goodenough, Mr. Richards was fully aware. He was in London at the time of their operations there, and upon being asked by Mr. Pembroke whether he would advise him to subscribe to learn the secret, replied that he need not go to that expense, as he could explain it all to him, which he did, also loaning him a copy of Offutt's book that he had with him.

that smells badly. I am a stranger to you ; all that will offend any of the five senses, I will be compelled to guard against, and those senses must have the proof that you will not hurt me, before I will allow them to be on me.

"*M.* I wish to put my hands all over you.

"*H.* This you may do, by commencing at the face. Commence rubbing on the face, and repeat it ; then pass on down the neck, first as slight as possible, and as I become used to it, rub the harder. Remember always to rub the way the hair lies smooth. My tail is, when I play, to be held up high ; as my pride and beauty, you must be careful in handling it. But after you raise it, be sure to repeat it, and raise it and put it down several times, until it goes up quietly. It becomes habituated by use.

"*M.* Then the more I rub you, and repeat it, the quieter you get ?

"*H.* It is so in all beasts.

"*M.* I wish to show you a pretty blanket, to teach you to let a man's coat or lady's dress hang down by your side, and in winter to keep you warm.

"*H.* You have shown me that you would feed me, and have also shown me other new things that have not hurt me. I will let you use the blanket about my face as soon as I can see and smell it, and then, when I feel it and hear the rattle, I will better understand it. If you change it for one of another color, I want to look at it and examine its quality.

"*M.* I will then spread it quietly over you, and repeat it, then let it hang down at the tail, and let it fall off at the heels and sides for a while ; then I will fasten it to the tail. This will make you used to things falling off your saddle or person, so that they will not frighten or make you kick. Will you let me hang a rope over you—about the creases of your neck—so as to let it drag along by your legs, and then over the back, to hang against the hips, and as you turn to rub the hocks ; then to put on the gear and fasten a rope to the ends of it, to get you accustomed to them, and put lines on your back ?

"*H.* Yes, sir ; if you will do it quietly, and not have the rope too hard or rough, so as to make me think it is a snake biting, or thorns sticking in me. If you put on the gear and lines (there are so many things about me at one time), I want you to put me by the side of my old acquaintance, Ball, for I have often seen him in the wagon, and the side that is against him I am not afraid of being hurt, and where he goes I will go. Young horses are fond of following their old friends ; but you must remember not to have me encumbered by a lot of gear, and then—or to have things knocking and jerking about.

"*M.* How shall you be started ? If you will go before, I will

follow. I want to feel my way five steps at first, or less than that. If alarmed, then let me know if anything is wrong by rubbing me over the face and neck, then after starting and stopping some three or four times, you will understand that.

"*H.* If you fasten me to such things and rush me off, and commence fighting me, I will then commence rearing and jerking to get loose and free from such abuse. Remember that confidence lost is hard to restore. Remember that all have to learn, and practice is important in exercise.

"*M.* With your practice of the use of the bridle, and friendly acquaintance with me, will you not allow me to ride you ?

"*H.* Yes, if you will show me that you will not hurt me. This is done by your rubbing me over the face, neck, and body ; then get along by my side, rising quietly in the stirrup, then down in the same place, until I can know your will. Now I am inclined to go with Ball round the fields, to learn how to walk and to turn to the right and left. There are cases that we learn to turn but one way, sometimes from sore mouth, other times from the tongue of the wagon striking against us, other times from alarm of gear, others from whips, so as to pull more than I know how ; consequently I look for the whip, and begin jumping up in confusion.

"*M.* How shall we teach you better than by taking level pieces of ground ? The wagon can be drawn slowly and quietly, and repeatedly practiced until it is well done. To be well done must be well practiced, for the mind to comprehend or design.

"*H.* How can you teach me to stand, if you have no plans or signs for me to comprehend the difference between going or standing ? I am always looking for the whip or a jerk of the bridle.

"*M.* If you are to know my will, I cannot let you know but by first letting you know my design until understood ; as for your stopping, I then speak to let you know I wish you to go along ; but if you repeat this, you know that—

"*H.* If I am to stand while you get on me, or for you to get seated in your carriage, or otherwise, you must first take the reins in your hand, then speak to me to let me know when to go ; for if I am always to be on the look for the whip for the sign to start by, I will be off in time to keep clear of it ; for between two opinions, doubting both, it is certain to be as often wrong as right, but guess if you are ready or not ; but as soon as you come to me and commence whipping me, and halloo, Whoa, I then look for the whip ; whenever you halloo, Whoa, confidence is lost in you, and I am looking for the whip, and friend horse shows signs for us to be off.

"*M.* How shall I teach you the acquaintance of umbrellas, handkerchiefs, my hat, my gun, or buffalo skin, and many other things you will meet with ?

"*H.* All these things are easy ; first, you must rub me in the face to get my attention, and then let me look at it in a quiet manner, and not get me scared and fearful of it, for I cannot always relieve myself of it at my will ; after I look, I want to smell of it, then to feel it, then hear the rattle of it ; if I feel at the time you rattle it, I more clearly comprehend it. First commence slowly and continue until understood. Fire off the gun ; at first it should be upward, as this is a new thing to me.

"Let the smoke and all be blown from the face of the horse, for in all cases are changed as soon. In various cases he will stand while the fire goes up when under foot, or at the nose, though it causes much alarm ; some stand well in the woods, others will not let persons stand round them and fire. In all cases of noise, keep the face in the direction of the noise ; steamboat or car, as it passes, turn their face to it ; it is a natural desire to see all things that they hear or smell.

"*M.* How do you like the drum ?

"*H.* It is pleasing to the organ of combativeness, as soon as I find it will not hurt me. Let me look at it and smell it, then rub it against my neck and shoulders, and where it is to rub me as you ride ; then lightly tapping it, then smell it, and rub it on me ; soon I will be after you with it, for I am inclined to give my attention to new things ; keep my eyes in the direction of the sound, it is easy to get me to follow the drum or any other music in like manner.

"*M.* A flag is pretty in the breeze and sunshine ?

"*H.* Yes, it is.

"*M.* You are fearful of its motion ?

"*H.* Yes, I am.

"*M.* Now the best way is to use the senses God has given you for your safety, for one failure would lose your life by poison, as you are surrounded by poisonous snakes ; but remember to see you are right, then go ahead !

"*H.* It is in this case as in all others ; or let it be the covering always flying about ; fold it up, let me see, smell, and rub it over my face ; then commence slowly by waving it over me, and as soon as the proof is enough all is right.

"In many cases it is better to put on first the bridle with the gagerarian side-reins, martingales and crupper, to hold the head and all in one attitude, that he is more willing to hear your friendly and quiet offering. In this manner you will soon let him know your will in repeated proofs, and all is right then. As soon as it is done, you then change the bridle ; you should begin by showing the same ; if he then receives it quietly, you may forever depend upon him if there be no cause for change.

"*M.* Why do you pull back when I go into your stall ?

"*H.* I am fearful of you; if you will put your hand on my hip before you come in, and let me know you will not hurt me, I will stand.

"*M.* You appear to have been displeased with this stall ever since you got hurt and scared here.

"*H.* I never like misfortune nor the places that cause them, for it is bad memory that forgets them.

"*M.* Why are you fearful of the bridle?

"*H.* My mouth has been hurt by it and the fingers, my ears pulled, sometimes my eyes—flies have hurt them; I am trying to take care.

"*M.* I will put on the bridle to let you know my will; check reins, martingale, and crupper to hold all fast; so you are compelled to hold still; then quietly handle the ears and lips; I find there is no hurt, all is right. I will in this case put on and take off another bridle over this until all is right. It may be important in some cases to do so with other things, or to spread a blanket over them, and over the head, and one down the back to the heels.

"*H.* I am more cautious than fearful. I do not fear the blanket; after examining it closely you may fasten it to my tail after putting it over the head and down the back to the heels, and letting it fall at the heels and sides; but be careful in opening and spreading it over the body, and frequently letting it go to the tail; if it does not cause me to stir up the dust, or in some degree tend to alarm me, you may know it is all right. If you wish it to drag after me, first let there be a piece of cloth hung on each side of me, some six or eight yards long, so as to rub each side of me at the same time; after this is done, fasten it to my tail. Let me be as wild as I may in all cases, have me by the bridle, and rub me in the face, speaking kindly to me, and not make me move only by my own will.

"*M.* If you are alarmed at anything around you, and will not move off quietly, the best way is to show you that you will not be hurt; then you will move off quietly; so when you are alarmed, you had best stand until the alarm is over, to prevent a fright.

"*H.* When you wish me to get on a bridge, ice, or in a boat, or into a strange stable or narrow walk, how will you manage to accomplish your design?

"*M.* I will go before you and show the best way. I am inclined to look around at it in as many different ways as possible, so, by turning about and leading up on one side of the place, and then the other, sometimes the width of the door, the trial will succeed gently. Be careful, the less you suppose the better; as like begets like, he is soon to contend.

"*H.* Remember that all animals are desirous of regular

exercise to wear off the unpleasant feelings produced by standing and want of water and motion ; it is necessary to quiet and compose the system, for those cause a horse to be gentle ; is in a better condition to remain in dry, but that he may be hungry and ready to receive your kind offer of some good food, and then exercise prepares them for further teaching. In many cases you exercise the horse and teach him the use of the blanket on his back, or to the rope over his body and along his sides and legs, to teach him not to kick ; you should not fasten the rope to anything, as it only tends to scare him.

"*M.* Will you lie down on a sandbank, or plowed land, or on a snow pile, that is free from sticks or stones, and all that is calculated to hurt you ?

"*H.* I am cautious where I place my body, so I will look around me to see if there is anything in the way before I lie down.

"*M.* How shall I teach you to lie down ?

"*H.* First rub my fore leg on the inside and out, until I find you will not hurt it; then take it up and put it down until I know there will be no hurt ; then loop around the leg, to hold it up, for fear of its slipping off ; then tie a string between the leg and foot.

"*M.* What advantage is there in teaching you to lie down ? In some cases there is none, but all horses are aware of their condition ; some that are wild, after being handled in this way seem to be convinced that they will not be hurt, and as they become more convinced by rubbing their legs and flanks, or any other part that will tend to quiet them while down ; but if any accident has previously happened to him, you can fasten him and do what is necessary ; so all that will make him docile is calculated to make him more useful and safe.

"*H.* All teaching is best that is quietly performed, and then repeated until well understood ; all would perform this ; after it is practiced some several times, you may take hold of the foot and the bridle, and cause them to lie down ; and you may by fastening up the leg, then gently tapping them on the front part of the leg, cause them to lie down at your command ; if you wish them to sit upon their hips, you must place their fore feet out before them, then let them rise gently, and you should stand closely to the sides to hold the bridle and press against them that you may steady them up. In some instances of this kind, it is better to use the curb bridle, yet you should be cautious not to hurt the mouth, as it is calculated to produce bad habits.

"*M.* You have long been rearing, kicking, pitching, and placing your head between your legs.

"*H.* All creation resents mistreatment, and this is the cause

of these actions ; some are inclined to practice them more than others.

"*M.* You say in some cases they are forced to do wrong, and some you are forced to make them do right ; there are various ways to force them to obedience. The first is to fasten them together with a strong rope around their neck, giving them not more than one foot apart, so that they cannot rear up and fall down, then leading them about to let them know they are fast, mount them and dismount them ; in this manner no horse can throw his rider. Another method is to have a leather strap, so strong that it cannot be broken, and draw around the waist so tight that he cannot rear up. Another is to put on them side lines to teach a horse to pace.

"*H.* Our reason and observation teach us that a thing to be done well, the mind must well comprehend the subject of it, and practice makes it the more perfect."

"Recipes for Taming with Medicine. (Verbatim.)

"To catch a horse, mule, or cow, take oil of rhodium, oil of anise, oil of cinnamon, three equal parts, mix them together, and let them smell it by putting it on your finger ends, and rubbing it on or in the nose, and in ten or twenty minutes they are ready to receive your kindness and your plan of teaching, etc. It has an astonishing effect on the animals of the world. I have managed dogs in a wonderful manner by it. It soothes the wild and timid. With a cow I have never failed to do all that may be required.

"To sicken horse with tobacco.

"Washing a horse with a strong decoction of tobacco will subdue his viciousness. One quart will make a nervous horse very sick. Others of a bilious temperament require a gallon.

"Great secret for taming.

"One pound of oatmeal, a quarter pound of honey, half Lawrance, made into a cake and baked. Put the cake into your bosom and keep it there until it sweats, and when the horse has fasted twelve or twenty-four hours, give it to him to eat. Then use him kindly and gently.

"The second best plan is to use the chestnut or scurf from the leg of another animal. It is found on the inside of the fore leg, above the knee, and on the hind legs adjoining the hocks. By drying and pulverizing it, and putting it into a goose quill that will hold a dose for each nostril, it serves to sicken or stupefy him.

"Third. The Spanish manner is to milk the mare and mix salt in it, and give it to them to lick from your hand some three or four times a day. In three days they become fond of you."

CHAPTER XV.

FAMILIAR TALK WITH THE READER.

It may be asked, "Have you given in this work all the secrets of your system?" I answer, Yes, without any reservation whatever. In the development of the principles presented in these pages, I was compelled at first to gradually feel my way, as it were, following up every clue that promised success, until, by practice and experience, the principles and methods of treatment herein given were developed, which must be considered as constituting a complete system.

The one important point in which I was most interested, and of which I made a specialty, was the *art of direct subjection*, to learn how far I could be successful in changing and holding the character as desired. With a variety of the most difficult cases to treat almost daily, I was compelled to demonstrate the practical value of every phase of treatment that promised good results, even including the various kinds of drugs supposed to be effective in taming horses.

In time I noticed the peculiarities of disposition and character upon which certain lines or combinations of treatment would have the best effect, until I was able to systematize the treatment, with great accuracy, to every condition of temperament and character of resistance. If not sure of the best treatment to use, I soon learned it by what I termed testing, or exciting the horse sufficiently to

have him reveal his true character, when I could easily determine the line of treatment to pursue.

For nearly twenty years I have been experimenting almost continually in this way upon all kinds of horses, so that I have been able to prove beyond doubt, by the most exact experimental tests, the effectiveness and superiority of the methods of treatment given. I was at first, like others, greatly misled, by the pretensions and assumed success of Rarey, into believing that there must be more in that method of treatment than I had yet been able to discover. On this account I was induced to try the treatment hundreds of times in cases upon which I had practically failed, with the hope of catching this hidden secret, until I was able to comprehend beyond all doubt its exact effect upon all kinds of horses. This ultimately brought me to the conclusion that back of it was gross trickery, which it was necessary, if possible, to unearth and explain. Indeed, the fascination and mystery in the public mind in relation to this treatment was constantly a source of embarrassment to me. The question, "Is your treatment anything like Rarey's?" was quite common. Or, if I hinted the least doubt of being able to control as by magic the most difficult case brought me, it would be made the basis of the unpleasant assertion that Rarey claimed to be able to subdue any horse in the world. If I could not assume to do as much, it was plain evidence that my treatment was not so good as his. Of course, when once able to form a class, I could make clear the limited and imperfect character of his treatment. Indeed, I would consider this work seriously defective were the explanation given to be omitted, as without it there must exist a strong vein of mystery and doubt as to the correct principles and true key of subjection.

I have also been frequently startled, even of late years,

by the bold pretensions of parties I have occasionally met, who claimed to be able to perform the most wonderful feats with horses; such, for example, as being able to make any horse in the world—no matter how vicious—stand gently to be shod, or be able to drive or ride any horse without breeching, etc., etc., in a few minutes. The positiveness of such assertions frequently led me to believe they really were in possession of new and important secrets, as I knew I had no treatment by which I could in so short a time perform such feats in the control of all cases. But invariably, in tracing the matter up, I found that their knowledge of the subject was very limited, being entirely based upon the use of one of the simpler methods of subjection given; and further, that many such persons had obtained their knowledge by attending one of my classes years before, or had learned the points indirectly of others; proving conclusively that I had nothing to learn from them, and enabling me to determine at once just what they could do.

I refer to these cases to show that if I could be influenced by the pretensions of such persons how easy it must be to impose upon and mislead those having but a very limited knowledge of the subject.

As to the use of pretended secrets in the way of drugs, etc., it is very easy to settle all doubt in the matter, as any one can obtain and experiment with them for himself.

I have tried to make every point so simple and plain that the reader can easily understand that there is no mystery in the control of horses, beyond that of skillful, intelligent treatment; that when managed according to the laws of their nature, it becomes a very simple matter to subdue and control even the most vicious horses; that every horse made vicious or unmanageable, is so, in reality, as the result of ignorance and bad treatment.

It is evident that a very little carelessness or inattention is liable to cause irreparable damage to a finely constructed engine. The adjustment of parts must be kept perfect,—no friction permitted. Managed by a skillful hand, it will do its work smoothly and reliably. But machines are of a fixed nature, governed by laws that are unchangeable; so that when the conditions and adjustment of parts are understood, they are easy of management; while in horses, as explained, there are such greatly varying degrees of size, strength, intelligence, and endurance, that their subjection and management requires, if anything, a far higher order of care and skill than is necessary in the management of even the most complicated machine.

A man must have patience, and the courage, if necessary, that borders upon rashness; yet always holding himself within the limits of safety. Whatever the difficulties or failures, like the skilled mechanic, he should only exhibit the more care and patience, until successful. It is especially important that there be no fool-hardiness, lack of judgment, or carelessness that will expose the horse to danger or accident. It is an invariable fault of those who claim any skill or experience in the management of horses, to be over-confident, to think too much of the little they know of applying the treatment, and too little of the difficulties and dangers of resistance in the horse to be treated. I have known so many fine horses needlessly excited or abused, strained, or even killed, by the sheer lack of judgment and care in the man, that I regard it as proof of the rarest qualifications of fitness and skill to succeed without accident.

A man who assumes to know all about horses, and "can break any horse," etc., only gives to any sensible, observing man the strongest proof of his ignorance. The

most ignorant man I ever knew in the business was the greatest pretender, and a good type of the many pretentious horse-tamers who have of late years infested the country. One of the points that impressed me most forcibly in questioning the genuineness of Mr. Rarey's pretensions, was his bold assumption of claiming to know the horse's every thought, and to be able to subdue any horse or animal in the world,—a boast that he repeated nearly every time he appeared before the public.

Notwithstanding I handled daily all sorts of horses, and was fortunate enough not to have any serious accidents occur, I never handled a horse of decided courage and spirit that I was not doubtful of succeeding without more or less trouble or accident. Many a time, in handling a critical case, my nervous system would seem to be fairly chilled with anxiety and apprehension, until I had succeeded. The greater my experience and opportunity for studying horses, the more could I see reasons for the greatest care and attention to every detail. A little carelessness, for example, might cause a horse to slip and break his leg, or be otherwise seriously injured. I have known horses when even led out by the halter, in jumping around, to break the leg, or be seriously lamed. Because there has been no accident, it should not be accepted as reason for not anticipating danger in future cases. No violent lunging, or careless, hap-hazard throwing, should be permitted, especially in the management of sensitive, valuable horses. It is as much the part of success to prevent accidents as to ultimately subdue the horse; because carelessness, or management that would expose the horse to strain or serious injury, would destroy the very object and value of the treatment. Every precaution should be taken in securing a good place for operations, with every requisite for the sure and easy control of the case. Nothing should be hazarded to chance.

Of course it cannot be difficult for any ordinary man, if he follows the directions here given, to break the average of bad colts and horses. But if the case is at all critical, success must depend upon making no mistakes, and being thorough. Every failure is an undoubted proof of the lack of judgment and proper effort. True success in this as in every other field of effort, must be the result of comprehending the conditions, and regulating the efforts accordingly. All these conditions require careful observation and thought. If the horse is bad, and there is not full knowledge of him, there should be an effort to make him reveal his character, when it will be easy to determine the kind of treatment to be used.

In building a bridge or steam machinery, where large risks to life are involved, extraordinary precautions are taken to insure safety against accidents, by requiring much more strength or power than is expected to be used at any time. Every part is tested as to its strength and weight, far beyond what it is ever required to sustain, and, when completed, is again proved, in order to give assurance of its safety.

Now in the subjection of horses, on whose docility and security so much is risked, I cannot too strongly urge the necessity of at least equal prudence and care to insure the greatest possible degree of safety in their use. All horses, especially those used for carriage and family driving, should be tested very thoroughly. There should be no fear of any rattle or noise of wagon, nor should any of the usual minor causes of fear be noticed by him while driving. There should be entire freedom to let the cross-piece run against the quarters, and yet the driver should be able to stop him instantly, without the horse offering the least resistance. Catching the rein under the tail, and all such incidental causes of irritation, should not be noticed by

him. It is not sufficient that the horse should bear these tests when not excited, but they should be borne under the most severe trials, to give assurance of perfect safety.

Certainly if a horse will not bear these tests, no matter how fine and good he may be in other respects, he should be rejected for such use.

The better to show the liability to failure in consequence of the want of judgment in carrying out the treatment properly, by persons having even the best of experience, I will refer to a few cases in point:—

While in New York City, a gentleman brought me a Kentucky mare that had resisted every effort to break. The last time, hitched to a sulky, she ran away, and was lost forty-eight hours. I took her in hand, and subjected her carefully to the Second Method, and succeeded in about fifteen minutes in driving her in the ring without difficulty. But knowing that to fix the impression of being entirely fearless of the shafts, etc., would require considerable driving, I directed one of my men who had assisted me for years, and who, so far as experience was concerned, should have been far more than ordinarily successful in the management of such cases, to take her in hand and work her carefully during my absence. I particularly cautioned him in regard to her extremely sensitive and positive character, and that he must be very careful not to get her excited and to fighting him, and left, supposing he would do as I directed. But to my surprise, on my return in the evening, I found the colt seriously injured from the abuse of exceptionally severe treatment. By carelessness, he got her excited and to fighting him, when he subjected her to the Third and other methods, carrying the treatment to the extreme of abuse.

The injury, however, was only superficial. In a few weeks, when well, in the presence of the owner, to whom

I explained the facts, I subjected her again to treatment in the same manner, and drove her in shafts without breeching. I explained to him that my treatment in the building would not break her; that she must be treated out of doors, and carefully driven in poles until thoroughly gentle to rein and submissive to them. In a word, the treatment must be made carefully progressive (as explained in chapter on Colt Training). He was advised to employ a good, patient man, and if the treatment were carried out as directed, there would be no difficulty in making her perfectly safe and gentle.

Before leaving New York, in 1872, a leading gentleman requested me to remain over a day, and show a man in his employ how to break a very promising trotting mare. He stated that the man informed him that she was so ugly and unmanageable he could do nothing with her. I knew the mare well, as she was once brought to my place for treatment. When driven with other horses, if not given her own way, she would balk. She was extremely sensitive, but perfectly gentle until excited or maddened, when she would become very stubborn, and difficult to manage.

I explained to the owner at the time that we could not break her under canvas; that she should be worked on the track, with other horses, at first moderately, but gradually pushing until she balked, when she should be subjected to treatment until submissive. Then the driving should be continued up to the point of proving her perfectly safe and reliable.

The man who had been employed to handle her was a sort of professional trainer, who claimed much skill and experience. He had attended the class of every horse-tamer who had visited New York for many years, including mine. He was quite an enthusiast, and on this account was employed by the gentleman to break this mare.

Next day I met this man, by appointment, in the upper part of the city, where the mare was kept. Upon inquiry, the man stated that he had hitched her to an express wagon, and she refused to pull. He made up his mind he would make her go, and threw her a dozen times or more, when he resorted to the whip. In fact, he entered into a regular fight with her, which ended in the mare becoming so stubborn and mad that he could do nothing with her. Said he, "She 's a bad one!"

I was certainly amazed that after all my instructions he should be guilty of such bad management in this case. I told him he should have known better in the first place than to hitch such a sensitive mare, that was entirely unaccustomed to drawing loads, to a heavy express wagon; that it was the quickest and surest way of spoiling her; that the First Method of Subjection was not at all adapted to her case; that it would make her submit so far as lying down, but no farther; that he should have hitched her to a light sulky, at first moving her slowly so as to get her into good humor, then gradually letting her out. If she balked, he should have tried the War Bridle, holding the Second Method as a reserve power. Yet he could not understand this, though it was repeated to him over and over.

I hitched the mare to a light sulky to test her, and let her go moderately for a few minutes, then gradually let her out, testing her quite hard, but she never offered to balk. She needed, in fact, but little more than careful, good management.

In Personal Experience, page 486, I make special mention of the difficulty I had in training Turco to turn to the motion of the whip; that I worked upon him for three days without making the least progress; and that finally he jumped over the girt upon the hay-mow to get away

from the abuse of the punishment to which I was subjecting him. Yet as soon as I comprehended the idea of doing it properly, I was able in a few minutes to make him do it without difficulty, showing that the real trouble was in myself and not in the horse. In looking back over my past experience, I can see that hundreds of times I struggled and worked with horses for hours, and even days, regarding it a great feat when I finally succeeded, even after the use of the most severe treatment,—cases which, had I known how to treat them as I by after experience learned to do, I could have succeeded in subduing in from a few minutes to an hour.

A very common and dangerous cause of trouble is in being led to believe that because a horse has submitted to treatment in one place to the point of making him docile, he must prove equally so in others. To show the danger of this, I will refer to an incident in point:—

While at a small town in Western New York, a man informed me that he had a six-year-old runaway colt that was entirely unmanageable. He wished to join the class, and bring in this colt for treatment. In consequence of a serious indisposition at the time, I could not do the work of teaching a class, and so informed the people. There was, however, so much interest in the matter that they volunteered to be satisfied with the instructions of my assistant, who was fully competent to give all the essential points, and to make the experiments. I cautioned him in regard to the character of the horse upon which he would experiment, for though I did not see the horse, yet from the description given I knew he was one that would require very careful treatment; that no matter how well he might drive before the class in the building, on no account must the attempt be made to drive him out of doors.

With these precautions observed, I apprehended no

trouble. But the experiment upon the colt was so successful, he driving around in the building without breeching, entirely gentle and fearless, the people requested that he be driven outside. My assistant, not being able to explain the principles and conditions of success so that they could understand (a dangerous omission which I feared he would make, but which I supposed I had guarded against), finally consented, being persuaded he would have no trouble in doing so. When the doors were opened, the horse drove all right until he got just outside, when he made a spring forward, pulled away, and made directly for the canal, which was close by. He jumped from the bank to the bottom, a distance of twenty-two feet, crossed, and soon disappeared down the tow-path. Being apprised of the trouble, I told the owner I would pay any damages sustained by the horse, and gave orders to have him caught and brought back. Fortunately the horse was unharmed, and I again subjected him to treatment, when he was driven without difficulty.

I made the incident an opportunity for explaining that a very common cause of failure is in supposing that because a horse has submitted to treatment in one place, and appears perfectly docile, he will prove equally so in all places; that there would be no more difficulty in driving a horse out of doors than in a building, provided he could be worked there as in the building. But the difficulty was, we could not do this on account of the crowd that always hung around, making it impossible to have sufficient privacy to subject him to treatment.

The public, somehow, could not understand this condition, and it was continually the cause of more or less trouble to me. A very bad case would frequently be brought forward to be experimented upon, when by subjecting to treatment he could be made to submit to being hitched up and driven around in the building perfectly manageable; but

when I explained that the treatment must be repeated out of doors to make him work equally well there, they would regard it as sufficient proof that the horse would not stay broken, and that the treatment was good for nothing. Or, after being taken home, if not proved perfectly gentle there, the treatment and experiment were regarded as a failure. On this account I was continually between two fires; for to admit that there were any conditions of failure would prevent my making a class, and to have any bad luck with a horse after his having been experimented upon, would be equally bad. Not unfrequently I would be compelled to drive horses in the street without the necessary preparations, and take desperate chances; or after driving without trouble a really vicious, dangerous horse, the owner would think he could do as much, and insist upon hitching him up and driving, and if any accident resulted, the fault would of course be laid to me. Very often, after desperate horses that had previously resisted all effort to break, had been driven before the class with perfect docility, the owner, and not unfrequently the entire class, would demand a return of their money, unless I would guarantee that the horse could be driven home with perfect safety, and this, too, after I had taken every precaution to explain to them, before forming the class, that I could do but little more at the time than to teach the owner how to manage him—that he must be treated at home according to the directions I should give.

For example, when at a certain town in Northern Maine, a five-year-old mare that had defied every effort to drive in harness was brought to me for treatment. It being impossible to shoe her, as a last resort they put her in an ox-frame to do so, but she struggled so desperately they could tack on but one shoe. I stated that there would be no trouble in breaking this mare, but that I could not do it be-

fore the class in a barn; that so far as making her gentle to be shod, I could do that in a few minutes, but to drive her in harness successfully, she must be treated out of doors, which could not be done on account of the crowd. They agreed to be satisfied with what I could do in the building. Having but a very small place to work in, it required the greatest skill to manage her successfully, and in less than ten minutes she submitted to have the feet handled, and finally to be driven, not only in the barn, but out of doors, as this was insisted upon. Yet the owner, and the entire class, were dissatisfied because I would not guarantee that the mare could be driven home to a carriage with perfect safety, and so I returned their money. A very little effort out of doors would have made this mare perfectly gentle to be driven, as I stated to them, and which was proved two days afterward, when she was driven in a crowd, without breeching, by a horse-jockey who traded for her.

At a place in Central Ohio, a horse that was afraid of a top carriage, one of the worst cases I ever saw, was brought in for treatment. After driving him successfully to a top carriage under the canvas, it was insisted upon as a condition of their being satisfied, that I should drive him out and into the streets. I did so, at great personal risk, barely succeeding. The owner now insisted that he could drive the horse just as well as I. I explained to the class that the horse should be treated out of doors before he could be driven with safety, and to prevent an accident, which I knew would inevitably follow, and destroy the confidence of the people in that part of the country in my efforts, I bought him.

I refer to these cases particularly to impress inexperienced persons, as shown by the first cases referred to, with the necessity of having a correct idea of the treatment for the case, and then carefully and patiently persevering until

successful. The last-named cases indicate that the work must be thoroughly done, where the horse is in the habit of resisting, and that in critical cases, stopping short of success in even a single point would precipitate failure.

The extent to which horses are used, and the dependence of life and property upon their docility and perfect obedience to control, together with the great depreciation in their value when they become of unreliable character, or have habits fastened upon them which render them dangerous and unfit for use, makes such instructions as will prevent and overcome these difficulties of the first importance. Yet notwithstanding the magnitude of the interest at stake, there is no duty in its true sense that is left so much in the hands of ignorant, irresponsible persons. Now while it is conceded that the horse is the most noble and valuable of all the domestic animals, and his possession and training are in every sense ennobling, the suspicion and taint of prejudice and jockeyism in the training and driving of especially fine and valuable horses have been so strong that if a gentleman even dared to own one, it was regarded as a sufficient cause for social ostracism. If he wished to test his speed, he dared not take a public road, but usually resorted to some back street or by-lane to escape observation and comment.

When Mr. Bonner had the hardihood to buy Dexter (at that time the fastest trotter in the world) for his own private use, paying for him the large price of $33,000, it served to give the horse his true status in the estimation of cultivated, intelligent people. Other gentlemen of wealth soon followed his example, and purchased the best horses obtainable at fabulous prices, until the emulation has become so great that some of the best horses now kept for private driving cannot be bought for $100,000.

In like manner the study and practice of the art of

taming and controlling horses has been regarded as so low and degrading that persons having any regard for their respectability would scarcely dare give it attention. But happily, as the importance of this knowledge is made plain to the people, the impression has become almost universal that it is worthy the study of the best minds in the country, and that it should be taught as a specialty in all agricultural colleges, and as far as possible to owners of horses in every town and county in the country. Certainly it cannot be denied that when it is engaged in with the sense of responsibility, care, and skill which it demands, it is in reality worthy of being ranked among the most important, interesting, and elevating of the professions.

CHAPTER XVI.

PERSONAL EXPERIENCE.

THERE has been such a desire to know how I came to engage in this business, that I venture to give a short account of myself under this head.

I came from Ireland when a boy of fourteen, and, being thrown upon my own resources, I engaged to learn the carriage-making business in Wellsville, N. Y. At the end of three months I was compelled by circumstances to seek employment elsewhere. I next engaged in the same business by the month at Almond, N. Y., where I remained two years, after which I obtained employment at Dryden, N. Y., where I remained nearly two years. While here, I arranged to go into business with a young man in the manufacture of carriages in Myersburg, Pa.; and after continuing the business nearly a year, I bought him out, and continued there alone for four years. During this time I became so successful a manufacturer of carriages that I took the first premium at two county fairs in Towanda, the first year on single, the second on double, carriages. The difficulties of this achievement can be better understood when it is stated that I did but a small country business, doing most of the work of painting and trimming myself, besides being compelled to compete with several large manufacturers.

During my residence here I first exchanged carriages for horses, and this led me to dealing in them. In this

way I became owner of horses of all kinds of habits, and was forced to the task of trying to break them. The better to illustrate some of the difficulties I experienced in doing this, I have included an account of one of these cases in the chapter on Balking. But the most remarkable and difficult case I had at this time was a medium-sized gray mare, which had the habit of balking and lunging. She could trot a mile in less than three minutes, and had the nerve and courage to go until she would drop. She would either balk, or suddenly rush ahead at the top of her speed, and make a succession of lunges in the air. She was one of the worst horses of this character I ever saw. On coming to the top of a hill she would jump several times, then rush down headlong. On reaching the foot of a hill she would rush up in the same manner. While driving, if she met a person or team, she would get into the same tantrums, and rush by regardless of all restraint. At such a time she would throw herself into the air against the bit with such fury that it would be impossible to hold her. By blindfolding and other devices I succeeded in driving her during the three months which I owned her, though I had many narrow escapes. While driving this mare, my neighbors would frequently wish to ride with me; but after trying it once it was rare that any one could be induced to repeat the experiment.

I learned afterward that she had defied every effort to drive her before coming into my possession, and was never driven after I sold her. Had she been properly broken in the first place, she would have been a valuable horse; but she was ruined by bad treatment. Though I succeeded in driving her, still I wished to subdue her so thoroughly that she would show no inclination to resist. After exhausting my patience and ingenuity, I tried as a last resort a remedy which I had often heard horsemen recommend;

namely, to tie her to a tree and whip her with hickory withes until she would surrender. I made the experiment, but it only made her so excited and bad that I could scarcely drive her at all afterwards.

As I have stated elsewhere, whipping is a means of punishment, and not, properly considered, of subjection. Consequently, if there is serious resistance, it should not be resorted to, as it is liable to do a great deal of harm. In the first place, tying and whipping a horse does not give him any idea what it is for; hence it has no direct relation to the resistance. In addition, it so intensifies and rouses the bad nature that the habit is, if anything, made worse. Another cause of trouble is that when excited the trainer is liable to overdo and seriously injure himself. I did not recover in a week from the excitement and exhaustion caused by whipping the horse as referred to. This mare was the only one in all my experience that I failed to reform.

At the expiration of my lease, I closed my business, and started out without any definite idea as to where I should go, but kept on until I arrived at Somerset, in Southern Kentucky. After waiting several months for "something to turn up," my attention was called to a fine horse which had a very bad reputation for running away, and could only by the use of much rigging be driven by a horse-tamer from Pennsylvania. The owner saw that I fancied the horse, and so got the man to hitch him up for me. While riding with him, I wished to take the reins, which he refused, saying, "No man can drive this horse but myself." Though I had no use for the horse, I determined at once to buy him, and did so. There was great curiosity to know what I could do with this horse, from the fact that this man had said that if I attempted to drive him, he would be sure to run away. Before hitching him up, I took him to

the woods, and worked on him until confident that I had him under control. When it became known that I intended to drive him in the streets, it caused great excitement. Many called it mere fool-hardiness, and tried to prevent it; but failing, they all came into the street to witness the performance. My jockey friend volunteered his assistance, but I told him I needed no help, and that I believed I could show him some things he didn't know yet. When ready to start, a couple of men in the crowd began to fight, one of them being knocked down, and falling directly underneath the horse. To the surprise of everybody, he stood perfectly still until the man was taken away, and then started off like any gentle family horse. His altered behavior aroused the suspicion that the horse had been "doped," or drugged; but as he remained perfectly gentle during the entire time I remained in the place, the mystery surrounding the affair was very great.

After spending nearly a year traveling in the South, I returned North, and finally brought up in Pittston, Pa. While here, there boarded in the same house with me a book-canvasser, who came in one morning and said he had made $3 in a couple of hours' time. I thought this was doing exceedingly well for a cold, rainy morning, and it led to my starting out to get names for him on commission. I succeeded that afternoon and the next day in obtaining seven orders, which so encouraged me that I bought him out, and industriously pushed this new business with great success among the coal-dealers between there and Hawley.

During one of these canvassing peregrinations I happened to put up over night with a man named A. L. Burns, at Dunning, Lackawanna Co. This gentleman was an intelligent, progressive farmer, who had raised a fine Hamiltonian stallion, then past two years old, which proved of a very vicious temper.

While Mr. Burns was milking his cows in the morning, I slipped into the stable and subjected the horse to simple treatment, making him follow me around in the barn without any difficulty whatever. After breakfast the owner went to the barn to show me the horse, when I walked in and led him out, and made him follow me around as gentle as a pet.* The change was so great that he was led to ask if I had not been doing something to the horse. I answered, "Yes; I went out before breakfast and got acquainted with him!" He said, "If you will show me what you did with him, I will give you $50." This seemed to me to be too much for so little knowledge; but wishing the money, the idea struck me instantly of instructing a number of persons at a nominal charge, and thereby fairly earning it; and in answer I said, "That is too much for you to pay; but if you will get ten of your neighbors, at $5 each, I will teach you for nothing." He at once went among his neighbors, and in a short time returned accompanied by a number of them, and handed me $50.†

It now occurred to me that I was in a bad corner,

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* Since writing this paper, I am informed that this was the same horse that was shot a few years afterward for his extreme viciousness. The statement made by Mr. Burns authenticating this is as follows: "I drove this horse single until he was five years old, when I put him into other hands for one year, and he became unmanageable. I then sold him to J. & A. Wells, who afterward sold him in Middletown, N. Y., and the authorities there ordered him shot on account of his viciousness." In 1878 the writer was in the stable where this horse was confined and shot a short time previous.

† While writing this article, it occurred to me as of sufficient interest to write to Mr. Burns for the names of those comprising this class. After much trouble in obtaining his address (having heard nothing from him for over twenty years) I wrote him, and received the following statement:—

"So far as I can remember, the names of the men in the class at my house were J. D. Burns, Prompton, Pa.; J. E. Meyers, Canaan, Wayne Co., Pa.; J. S. Collins, Keyser, Lackawanna Co., Pa.; Andrew Coss, Canaan, Lackawanna Co., Pa.; Alva C. Bemeer, Canaan, Lackawanna Co., Pa.; L. C. Darte, Ariel, Wayne Co., Pa.; Jason Myers, and myself. Your friend,

A. L. BURNS.

"*Dunning, Lacka. Co., Pa.*"

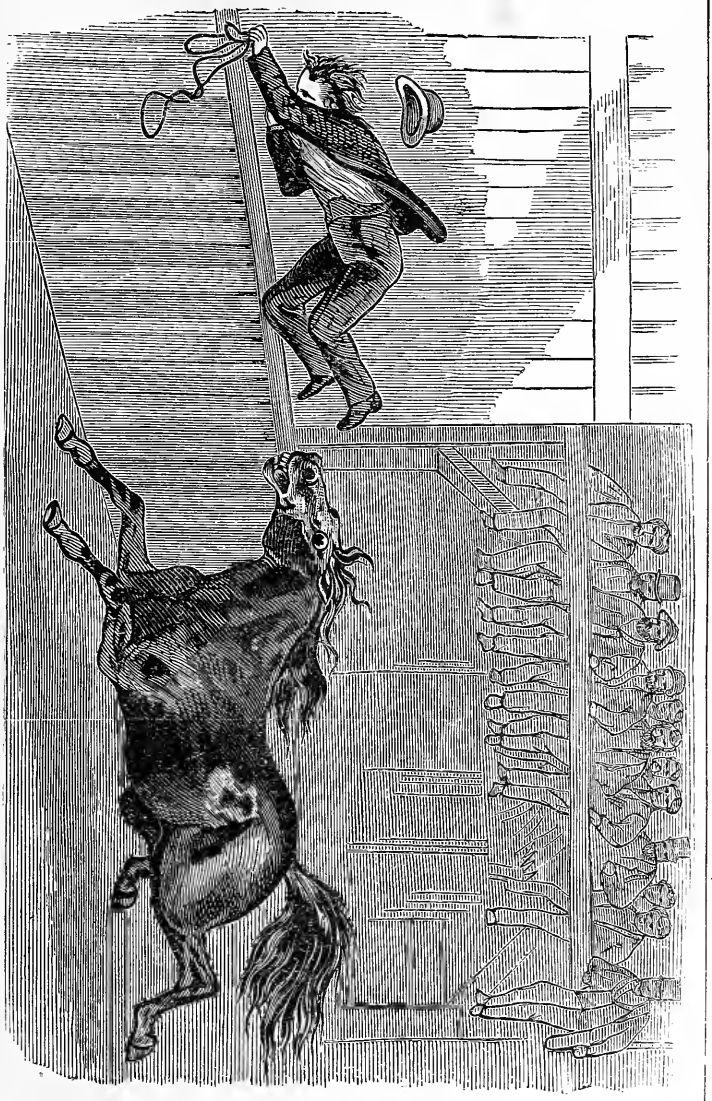

FIG. 298.—With ears laid back and mouth open, she instantly ran for me, showing the most savage ferocity.

knowing that I really knew nothing about horse-taming; but I had the money, and felt that I must, if possible, carry the matter through, so as to be able to hold it.

In the neighborhood was one of the most unexceptionally vicious, biting mares ever known in that country. When turned loose, she would run at a man with all the ferocity of a bulldog; but of all this I knew nothing. When I organized the class, I observed that all got up overhead except one, who from a side stable turned the mare loose upon the barn floor where I was standing. With ears laid back and mouth open, she instantly ran for me, showing the most savage ferocity. I saw that she would bite and trample me under foot. Directly behind me was an empty haymow extending three or four feet below the floor, thus making a fall of from seven to eight feet from the top of the girt to the ground. I turned quickly, but not having time to jump, I threw myself head foremost over the girt. The ground was covered with stones and limbs. I was considerably stunned, of course, by the fall, but not seriously injured. Fortunately I had a common slip-noose halter in my hand, which I retained. When I arose, I saw the mare's head over the girt looking at me. Overhead were my scholars out of harm's way, laughing at my defeat. I consider the event of sufficient interest to give an illustration of it.

The mare had nothing on her, and it was evident that no one could approach her with safety. Here I was at the first movement helpless and defeated; but my temper was up, and I was bound to go through with the matter at any hazard, and make it a success. I still held the halter in my hand, and scarcely thinking what I did, I picked up a stick, and hanging the head-piece on one end I reached up and carefully placed it over her head. I now put the end of the stick against her jaw to keep her head from me, and

climbed upon the girt. Getting as short a hold of the halter as I could, I took the chances of jumping towards her tail, and caught it. The momentum of my jumping pulled her head after, and threw her hind parts from, me; a fact which I improved upon, and pulled her around rapidly five or six times, making her dizzy and disconcerted. I then reversed quickly to the other side, catching the tail in the same manner and running her around rapidly. This I repeated several times, when I had her sufficiently disconcerted and under control to make the next step; namely, tying up her leg and throwing her several times, after which I put on the old form of War Bridle and made her follow me, making the experiment a complete success. This took me not more than ten minutes. So far as I know, this was the first attempt ever made to halter a horse with a pole, or to run one around in this way to make him dizzy and helpless. The necessities of the moment drove me to this course as the only way out of the corner in which I was placed, and it was successful. It would be an easy matter for me to control such a horse now, but taken as I was then, without even a knowledge of first principles, it seemed like a great success.

The next horse experimented upon was a surly kicker, though not in appearance very vicious, yet a far more difficult case to manage. The novelty and excitement of the whole thing so interested me as to strike a new key in my nature, and without reflection I dropped everything else, and determined to engage in the horse-taming business. My first step now was to inform myself upon the subject. Procuring every book available upon the training and management of horses, I was surprised to find no authority whatever on the subject except Rarey. His method of treatment, though regarded as so much of a feat, seemed so simple to me that I did not feel under any apprehensions of being unable to do this, or even more.

My real difficulties now commenced; had I realized at the time what they would be, nothing could have induced me to engage in such business. First, I was very youthful in appearance, and undersized—points very greatly against me; and secondly, I was without the address necessary to interest others in my efforts. I at first made but one small class in two weeks, and to add to my difficulties, my expenses had about exhausted my means. At my last place of engagement, notwithstanding I made a supreme effort to get a class, I failed. Still I was determined to succeed, and by the influence of this effort I made a success at a neighboring town. This became a turning point in my fortunes, for from that time, my success was almost continuous, the citizens frequently clubbing together to form a class for me, and I was often invited back several times to the same place. Some time after this, a chance circumstance occurred which had great influence in increasing my success. I was advertised in a little town called Minaville, in Montgomery Co., N. Y. Upon arriving there, I not only found no interest at all in my efforts, but those present commenced ridiculing and blackguarding me until I was finally driven to defend myself.

After this, to my surprise, those who had abused me most were the foremost in proposing to form a class for me. It being then too late, and having no suitable subjects upon which to illustrate treatment, I declined. They then made the request that I would come another day, promising, if I would do so, not only to come out themselves, but to do all they could to bring out a general attendance of their neighbors. A week later I returned, and was successful in making a large class.

Some time afterward, at a small town across the river from Amsterdam, when about ready to make up a class, three of the Minaville members then present requested a

private interview with me. They told me they were dissatisfied, and demanded a return of their money. They said, if I would return it quietly, they would say nothing about it, and would help me all they could in that place. They could give no reason, only they were "not satisfied." I told them I could not do so unless I returned the money to the other members of the class also, but what I had to say about the matter I would say publicly. I accordingly called the people up around me, and told them what the fellows wanted, and what I had said to them, and closed up by announcing a time when I would go back to Minaville, and give to them and every member of that class their money back if they wanted it. Despite the strong opposition set up by these Minaville members, I succeeded in making a large class here, which was a decided success.

It now became necessary to make decided effort at Minaville, as I knew these fellows would do all they could to prejudice the other members of the class. On this account, before the day appointed, I scoured the town to find good subjects, and succeeded in finding but one horse that had the habit of running away, and which had not been harnessed in over a year. By paying a liberal sum, and passing the owner into the class free, I procured this horse, and succeeded in making him entirely gentle. At the close of the lesson, I explained why I had returned, and told them that if they then felt they were not satisfied, one and all of them could step forward and get their money. They all expressed themselves fully satisfied, even those who had been opposing me, and passed a unanimous resolution of thanks, which was published in the county papers. That evening, the horse referred to was purchased by one of the scholars, and proved afterward a safe, reliable family horse.

During the early years of my experience, my efforts

were more or less experimental, each new difficulty or phase of character trying me harder. When I failed, I never felt satisfied to let the matter so rest, and often at great inconvenience and expense would return and repeat the experiment privately until successful. I did it mainly for my own instruction. To show the persistence with which I sometimes followed this up, I will refer to a case for the sake of which I was compelled to lose over a week's time, and travel over a hundred miles :—

At Vienna, N. Y., I failed on a horse brought in by Dr. Carpenter, a leading physician in the place, and lost a large class. Before leaving, I told the owner I was unwilling to let the matter rest so, that after meeting my other engagements, I would come back and take the horse in hand privately, and see what I could do with him. These engagements took me over sixty miles away. A week afterward, I drove back and spent half a day in handling the horse, barely succeeding in his control. The gentleman proposed that I again advertise the place, assuring me, if I would do so, I could get all the members of the former class, and a number of new ones. This I declined to do, when he offered to get them together himself, providing I would teach them; and through his efforts and influence a larger class than before was assembled. This time I made a decided success.

Whenever I found very peculiar cases, I obtained them, if possible, to experiment upon. I will refer to one very marked case. When in Buffalo, N. Y., I heard of a trotting mare which was a desperate runaway of a peculiar character. She had been owned by a canal stableman in Erie Street, who, after she had run away with him several times, traded her off. Upon inquiry, I found the mare, and prevailed upon the owner to let me have her to experiment upon. He consented, on condition that I would pay

for her keeping while in the city, and pass him into the class free. Out of harness, she was entirely gentle; but in harness, despite the pulling of two or three men, the patent reins, or the most severe bits that could be used upon her, she would resist all restraint and run away.

This mare was a nervous tempered, ordinary looking bay, long-haired, deep-chested, rather heavy-boned, and not inclined to put on flesh. A very noticeable indication of the character was in the head, which was quite long and narrow. The eyes were rather small, and full below, the nose rounding, and ears long. I would call attention to one point; viz., that a well-bred horse, possessing great powers of endurance and action, and having the head full and straight below the eyes, especially if the eyes are small and set well back, will be likely, if vicious, to show great obstinacy of resistance.

Upon trial under canvas, she submitted readily to treatment, driving around the ring gently after about twelve minutes' treatment; but not revealing herself, she became the more suspicious and dangerous to me. On this account, while testing her outdoors, I took the most careful precaution to prevent her from getting away. She would drive gently for a few moments, then suddenly rush against the bit with all her might. In this way, for more than five hours, she continued the struggle with the most wonderful courage, when she yielded and drove perfectly gentle.

Accompanied by a good assistant, I next tried her outside the city, when I found her as desperate in her resistance as though she had never been touched. She fought every point from nine o'clock in the morning until four in the afternoon, when she again yielded. This was one of the greatest exhibitions of pluck I ever saw in any horse, and I was determined to see whether or not such a horse could be broken. During the struggle, her eyes

were like coals of fire, her ears thrown back, and the sweat at times pouring from her in streams.

The Patent Bridle would have enabled the control of this case directly. The subjection of these extreme cases caused me a great deal of extra work and expense, but finally enabled me to determine with great accuracy the character of any case when presented for experiment. It was often a matter of surprise that, upon being told what a horse would do, I could with but rare exceptions, describe accurately the color, size, kind of head, and character generally. Of course there are modifications of character which cannot be determined while the horse is in a passive condition, but which can be easily determined by testing.

I early felt the need of some feature of interest that would attract the attention of the people. I at first purchased a pair of elks, which I tried to train and drive, but in consequence of their being too old, I could not make them safe.

Some time after this, I heard of a man who as an advertisement drove a stallion without reins in the street. At Fonda, N. Y., I saw this performance, and introduced myself to the owner, Mr. A. H. Rockwell, who afterward became quite famous as a traveling horse-tamer. As a great many since then have claimed to be the originators of this feat, I will state the facts in relation to its first accomplishment:—

The horse Morgan Tiger was undoubtedly the first driven in this way. He was trained by a lady, Mrs. Fred Bunnell, then a resident of Wellsboro, Tioga Co., Pa. Mrs. Bunnell exhibited remarkable skill in training and driving horses. She trained this stallion, and, among many other novel tricks, taught him to go right and left, back, etc., to the motion of the whip. This horse was naturally very intelligent and stylish in appearance, but

gentle and lazy in disposition—just the kind of horse to train easily and not incline to run away. She exhibited him several years at Chemung and other county fairs in that part of the State of New York, attracting much attention with him, yet always having reins on him.*

He finally passed out of her hands, and was afterward hired by Mr. Rockwell to give exhibitions in halls. This not paying, and finding the horse would turn right and left by the whip, he took off the reins and so drove him in the street. To attract attention, he now advertised to drive a stallion in the street without reins, and engaged in teaching horse-taming on the Rarey system.

Upon seeing this horse thus driven, I at once determined to train the first good horse I could find to drive without reins. Although I failed to learn in this instance how it was done, yet I made up my mind that it had been done once, and it could be done again, and *I* would do it. Soon after I went to Smithville, Jefferson Co., N. Y., where I found a remarkably fine, four-year old, black stallion, entirely unbroken, owned by 'Squire Cole. He was naturally vicious, but, liking him, I gave all the money I had for him. I now had a wild, unbroken colt, so vicious that it was difficult even to lead him, and certainly the possibility of training such a horse to drive before a carriage safely under any excitement, and with nothing on his head, seemed not only a difficult but a doubtful task.

I worked three days trying to teach him to turn to the right or left with the whip, but utterly failed; yet I did not in the remotest degree give up the idea of succeeding. At this point I was impressed as though by inspiration

* This I learned when in that part of the State afterward, from various parties, including Mr. Bunnell, husband of the lady, who became a member of my class at Wellsboro. It was also corroborated by Mr. Hurlburt, Mr. Rockwell's brother-in-law, who traveled with him.

how it could be done. My first step was to quiet down the excitement I had caused him by my previous abuse (for it was nothing else). I then gently mounted him, took a short driving whip, and commenced a moderate tapping against the shoulder, at the same time pulling his head around a little, and repeating until he got the idea, and would come around himself. When he moved the first time, it seemed a great achievement. I then repeated the treatment upon the opposite side, and in less than half an hour had him so he would turn right and left as touched. Soon he would turn around without being asked, and stop to get his reward of apple. If he did not promptly get it, he would repeat the turning, and then stop again, and ask for his reward as plainly as a beggar.

From this point, he made such rapid progress that in a week I could drive him freely without reins in the street, guiding and controlling him perfectly with the whip. In two weeks I was able to give exhibitions with him, the first being in Watertown, where the known circumstances were regarded with great interest.

This was my horse Turco, which afterward became quite famous for his remarkable sagacity, and the ease and perfection with which he could be driven with the whip. He was in reality the only horse ever exhibited in this way that proved perfectly safe and reliable, and that never ran away. I could even put him on a run, and drive within an inch or two of any point desired, then turn so short around as to upset the wagon, yet at command he would stop instantly. I trained several horses afterward to drive single or double, but never had one that would equal him. He developed some traits of remarkable sagacity. He was naturally so vicious that I did not dare go near his head without keeping my eyes on his, or catching his halter to keep his head from me.

To turn my back to him would certainly at times be dangerous; but by careful management, I so subdued his nature that he became very gentle, though occasionally he exhibited great viciousness toward others. For example, if the groom showed the least timidity in approaching him, he would become so aggressive that he would lunge and kick at him with bull-dog ferocity. At such times, I had only to step in front of his stall, and say, "Turk, this man is all right; he only wants to clean you," when he would stand a model of docility, even allowing the man to sit under his body to clean him.

As he grew older, he learned to distinguish stablemen from others; for any man who held a brush or currycomb in his hand, would be permitted to walk into his stall and around him with perfect safety, while others would get an emphatic warning to keep out.

I next traveled through Northern and Central New York. At North Vernon I made the important discovery of the Second Method of Subjection, explained in the first chapter. Soon afterward I visited the city of Utica, where, after subduing the "Roberts horse" (Case 11, Subjection), and teaching several large classes, I was severely injured by a horse's stepping upon my foot, which disabled me about two months.

It occurred to me while here to write up the details of my treatment, as there was almost daily an inquiry from my old scholars for it in printed form. I did so, and had it published at the Utica *Herald* Office in 1862. This was the first publication, called, "The New System for Educating and Training Horses."

A year later, when in Newark, N. Y., Mr. Rockwell, before referred to, visited me for the purpose of arranging to travel with me through the Eastern States. I drove from this point to Greenfield, Mass., meeting him by

appointment at Harpersville. Upon arriving at Greenfield, I concluded not to engage in the enterprise, but sold out to him, for $300, the right to republish my book (which he was very anxious to do). I include a copy of the contract, drawn by a counsel :—

"It is hereby understood and agreed between D. Magner and A. H. Rockwell as follows ; to wit, in consideration of the mutual agreement herein made, it is agreed that said Rockwell shall make notes and additions to the book called 'The New System of Training Horses,' of which he has bought one-half of the copyright of said Magner, said notes and additions to be such as he, the said Rockwell, shall think suited to add to the value of said book ; and that a copyright of said book shall be taken out in the names of said Magner and Rockwell jointly and equally.

"*Nov. 3, 1863.*"

Soon after, I consented to have my name left off the title page, which he desired on publishing a new edition. In making a revision of this little work, Mr. Rockwell claimed to have trained my horse Turco, before referred to, and implied that he started me in the horse-taming business, when the facts were that I was over a year on the road before I ever met or heard of him, and I had trained and exhibited this horse nearly two years before *he* ever saw him.

From Greenfield I went directly to Maine, where I met with the most flattering success. At Portland, almost the entire population came out to witness the feat of driving without reins. I had several large classes there, reference to which will be found in the following editorial notices :—

"Mr. Magner, the horse-tamer and trainer, has been in Portland during the past week, and has created a great stir among our horsemen. So great was the interest excited, that Mr. Magner formed a school, which was largely attended by those interested in such matters, including many of our best citizens who have fine horses, and seems to have been altogether satisfactory. Such success in so brief a period is quite unusual. His exhibitions have

been very interesting, and have satisfactorily demonstrated his ability to bring the most unmanageable horses entirely under his control.

"An innocent colt, fresh from the country, was introduced, and in a few minutes acted the part of a well-trained horse; then came a spirited mare, whose stubbornness was not so readily but no less surely overcome; an old stager, which had for years defied every farrier in the county, but after five minutes' training stood quiet as a lamb while his feet were handled and hammered in true blacksmith style; a splendid animal, whose principal fault seemed to be unusual fright at the sight of an umbrella, in a very short space of time stood unmoved as one of these articles was placed before him and moved about his body, and when at last it was held above and dropped upon his head, he appeared to regard it with far more of complacency than fear; a puller on the bit was beaten at his own game, and yielded handsomely.

"Whatever the tricks and eccentricities of which the animals brought forward were guilty, they found more than their match in the horse-tamer, who did not in a single instance let a horse pass out of his hands till he could truthfully say, 'I have you, sir.' He was asked to test his skill still further on a vicious mule which was brought in and turned loose in the ring. He was indeed a villainous fellow, and not at all agreeable in his manners, refusing to be bridled or handled, and meeting every one who approached him with an undesirable display of his heels; but in less than fifteen minutes his whole demeanor was changed, and he remained perfectly quiet while he was again and again haltered, mounted on all sides, and handled from head to foot, and finally was led out perfectly submissive. The change was wonderful, and called forth great applause.

"These exhibitions are, as we learn, foreign to Mr. Magner's custom and general purpose, which is, not to exhibit feats in horsemanship, but to make the people practically acquainted with his system, and thereby create increased interest in raising and managing horses. He is soon to start out into the towns of this State, and we hope farmers and horsemen will give him all the attention which his theory and his success merit."—*Portland (Me.) Transcript, 1864.*

"Mr. Magner, whose equestrian feats have excited the wonder of our citizens, has left the city in order to fulfill numerous engagements in the country. It is very fortunate for him that this is not an age when men are executed for witchcraft. Had he lived in Salem in 1692, and exhibited, as he has here, his power over refractory horses, he would have been hanged, as sure as fate, for a wizard. Indeed, we are not certain that he does not prac-

tice some sort of witchery in his management of horses. No one can form an idea of his wonderful power over them, until he witnesses proof of it. To see a horse furious, stubborn, defiant, with a very devil in his eye, in a few moments, by some mysterious power, calmed down, rendered docile, patiently submissive, and allowing every liberty to be taken with him—in a word, the evil spirit which had possessed the animal, completely exorcised—you can hardly credit, although the marvelous transformation takes place under your naked eye. A knowledge of Mr. Magner's theory of subduing the horse must be invaluable to all owners of the animal."—*Portland (Me.) Advertiser, 1864.*

This was in the winter of 1863–4. I next went to Augusta, the State capital. A very trifling incident here enabled me to attract considerable attention. A prominent member of the Legislature purchased, the day before, a fine horse, and desired me to look at him. Perceiving the horse to be unusually intelligent, it occurred to me that here was my chance to create a little surprise, and I determined to improve it.

Seeing a small switch lying upon the ground before me, I picked it up, took the horse by the halter, moved him around, and, while talking to the owner, quickly brought the switch over the horse's back to the opposite side of the head, and with a few slight but rapid strokes taught him to come around and follow without the halter. (Full details of this method are given in the chapter on Colt Training.)

Throwing the hitching strap across his back and dropping the switch behind me, I walked around carelessly, the horse following. The owner wished to know if he would follow him. I answered, "Yes; go to his head and walk around." Upon trial, he did so. Not noticing that I did anything with the horse, the man thought it wonderful. He told his friends that I merely looked at the horse, when he would follow me anywhere!

The story doubtless became magnified as it went. At

any rate, on the next day the members of the Legislature, the officers of the Second Maine Cavalry, and those of the Fourth Infantry, attended my lecture in a body. The better to illustrate the inclination of many people to magnify trifling events when not understood, I will include here an incident in point:—

Once, in a town where I was entirely unknown, and the prospect for success very doubtful, I was invited to go with a man to his stable to look at a valuable mare. She stood quietly enough in the stall, but on approaching, my suspicions were excited by noticing the fear of the owner. Observing carefully, I saw that unless approached just right, she would be likely to kick, and determined at once to make the circumstance a key to my success.

While standing a little behind the stall, to attract her attention I spoke to her sharply, at the same time glided up to her shoulder, rubbed and caressed her head a little, and then got out in the same manner. I told the man there would be no trouble in managing her, which was true. I then went directly back to the hotel, claiming to be in a hurry, but in reality for the purpose of allowing him an opportunity to ventilate his opinions among his neighbors, which he did with an effect quite beyond my expectations. After my exhibition, the moment I was ready to form a class, the citizens voluntarily came forward and gave me their names.

After the experiments and instructions, I was with much interest asked, "How did you manage to get inside that mare's stall to-day without getting kicked?" Said they, "She is one of the worst mares in the country. No one has been inside her stall before for over three months, for she would kick any one going near her." The owner had told the people, as I expected he would, that as soon as I went near or looked at the mare, her whole character

seemed to change at once; that she looked as though she wanted to get near me; that to his amazement, when I walked in by her side, she never offered to lift a foot or show the least viciousness toward me, and that I handled and stepped around her as unconcernedly as I would any horse. The whole point of my doing this lay in being able to discern her exact character and what she would bear. The leading gentlemen then in the city from different parts of the State, were excited to the highest pitch of curiosity by the reports, as stated, of my powers, and it was determined to test me to the utmost degree. To insure this, a special committee was appointed to visit the officers of each company of the Fourth Maine Cavalry, which was at the time encamped near the city, to learn the number and character of vicious horses among the twelve hundred belonging to the regiment, and to select five supposed to be the worst from the whole number reported, upon which to make the promised experiments. Although apparently very vicious, the subjects selected proved very simple and easy cases to manage. I include editorial notices of the event:—

"Mr. Magner, the author of this philosophy, has astonished the good people of Augusta and vicinity by the admirable and perfectly successful demonstration of his system, in subduing and controlling some of the most vicious and ungovernable specimens of the horse fraternity that could be found among us. The manifest and acknowledged importance of this art, and the desire of the public to understand and witness the results of its application, induced a crowded attendance of all classes on Mr. Magner's practical illustrations of his theory. All who attended, came away fully convinced of, and perfectly satisfied with, the correctness of the principles and workings of this new system.

"Even the members of the *Senate and House of Representatives*, and the members of the Executive Council, took a leisure hour, laid by the affairs of State, forgot their parliamentary squabbles, and found both amusement and instruction in witnessing the skill and consummate tact with which Mr. Magner handled the hitherto incorrigible subjects brought forward to test his new doctrine. Crowds of our most intelligent citizens were

also in attendance, and became decidedly and thoroughly satisfied that Mr. Magner's system is all that he claims for it, and when applied, will be effectual in bringing the wildest and most stubborn horse into complete subjection and docility.

"A large class of pupils united in order to profit by Mr. Magner's instruction, and learn the best modes of applying his theory to practice; and as a matter of course, the hardest and most vicious horses that could be found in the neighborhood, were brought in for him to subdue, all of which were completely tamed, and brought into such a state of docility as to astonish those who saw it. So satisfactory and perfectly successful were his instructions and experiments to every one who attended, and so efficient and useful did his principles and modes of procedure prove themselves to be in training and subduing horses, that the *officers* of the *Second Maine Cavalry* were influenced to invite him to give a course of instruction to those of the regiment who could be spared from duty to attend. In this, too, he was perfectly successful, as in all other instances.

"The most dangerous of vicious horses are those frisky, nervous, touchy kickers, whose heels are always ready to greet you whenever you approach or attempt to harness them. One of this class was brought forward, of so desperate a character that her owner cautioned Mr. Magner that he would expose himself to danger and probable injury if he was too familiar with her. In a very short time, he had her so effectually subdued and conquered that he could do anything he pleased with her—jump upon her back, slide off behind her heels, handle her feet, and place himself in any position he pleased around her, without her offering the least opposition, or showing the least disposition to bite or practice her old tricks.

"We look upon this mode of horse-taming as an art wonderful for the sure and infallible results which follow its appliance."—*Kennebec Journal, Augusta, Me., February, 1864.*

"It is all quietly done; no whipping nor thrashing; no mauling, brawling, nor swearing, as has often heretofore been the custom in such cases. Herein is one of the great and invaluable improvements which Mr. Magner introduces in the art of bringing the horse under complete control of man. We make these remarks for the purpose of calling the attention of our farmers and owners of horses in Maine to the new improvements of such vital importance to their interests. We have taken great pains to give them a personal investigation. You will find Mr. Magner a modest, unassuming young man, and no humbug, and we cordially advise every one who can, to obtain the benefit of his lectures."—*Maine Farmer, Feb. 24, 1864.*

I now traveled through Vermont, New Jersey, Pennsylvania, Western New York, and Ohio, training in the meantime several horses to drive without reins, both double and single. Even after I had trained Turco, I soon found it necessary to have additional features of interest to enlist the degree of attention desired. When in Maine in 1864, the day before my exhibition, I advertised to make any wild, unbroken colt so gentle in twenty minutes, that I would take him, without bridle or halter, into the street, and by the control of the whip alone, ride or handle him in any way I pleased. This I failed to do but once. When in Anson, a remarkably vicious colt was turned into a barn so large that I could not get to him before he became so excited that I knew I could not control him in the time claimed. Of course it would not do to admit this, and so I made the people crowding around and looking through the cracks, an excuse for not attempting anything further at this point.

As I went into the street, I saw a young man riding a colt toward me. Upon inquiry, I found he was from the country, and I told him I would pass him into my class free, if he would let me handle his colt ten minutes to illustrate my treatment before the class, to which he consented. I made up the class on condition that I would perform the feat upon the colt before referred to in their presence; but as it was an exceptionally bad one, I took this precaution of obtaining an easier one to handle and upon which to explain the principles. By this course I succeeded, though it was a close pull, as it was absolutely necessary to make the colt entirely gentle and control him as promised. When successful, I told the class the whole stratagem, as I made it an invariable rule to give them the facts, at which they laughed heartily.

Afterward, when in Western New York, I advertised

that, each day before my regular exhibition, if the people would remain twenty minutes in the center of the town, I would take any kicking, runaway colt they could produce, lead him from them outside the town, and, within the time named, would subdue and drive him back to a carriage, without breeching. Or if I found a horse that had recently run away, and which could not be controlled, I made it in this way a startling card. For example: In Hornellsville, N. Y., I obtained a pony that had only the day before run away with a constable, a large, strong man, causing him serious injury, and breaking the wagon to pieces. In twenty minutes, I drove him in on a run, with breeching straps loose, and cross-piece striking against the quarters. Having almost reached the crowd, I purposely fell out, and when the horse had gone six or eight rods, I called "Whoa!" sharply. He stopped instantly. This incident enabled me to make a large class there.

In one instance only, I did not dare make the attempt. This was at a little place near Rochester. The colt selected was running in a field, and I accompanied the owner to get him. As soon as I saw the colt, I knew I could not control him in the time specified; but I raced around with the owner to catch him, in the meantime thinking how I could manage the matter. Failing to catch the horse on account of his extreme wildness, I finally took the owner into my confidence, and told him that I did not want to catch the horse; that I knew I could not subdue him so as to be able to handle him in the time stated, but that I would show him how he could break him, provided that he would help me out of the scrape, which he promised to do, and so reported that the colt could not be caught. Fortunately, at this point I saw a young man driving a spirited horse up the street. Ready to catch at any point, I approached and asked, "If the breeching-straps were to break,

and the cross-piece strike against the horse's quarters, would he not kick and run away?" He looked at me in surprise, saying, "I guess he would. I know I would not want to be in the wagon and have it strike him. He ran away once, and tore the carriage to pieces." I said to him, "I will pass you into my class free if you will let me have your horse ten minutes." Consenting, I told the people what the horse would do, which was known to be true. Knowing from the disposition of the horse that there would be no difficulty in his subjection, I got in with the man, telling him to drive quickly to the edge of the village. As soon as out of sight of the crowd, I jumped out, first making the owner promise he would not tell any one what I did, and made the horse submit to control in three or four minutes, then drove back rapidly with both breeching-straps loose. When I reached the middle of the crowd, I threw the reins out, and called sharply, "Whoa!" when he instantly stopped, holding the wagon back with his heels. The quicker the feat could be done, and the greater the chances taken, the more surprising and startling it would prove. The main point of success was in being able to know how much could be done upon the horse in a given time, and if the risk was too great, to avoid it altogether.

Sometimes it was extremely difficult to make these experiments, as I could not have sufficient opportunity or privacy. No matter how much I might reason with the people that upon the condition of their remaining in town would depend the success of the experiment, as soon as I started with the horse the whole crowd would break right and left to follow me. For example, when in Ashtabula, O., where I had a good subject offered, after trying twice and finding the crowd would not be kept back, I succeeded only by the following stratagem: An old scholar informing me that he had a good place about half a mile out of town,

I directed the owner to take a back street and drive there quickly, and the few friends who wished to see the experiment to go separately, while I jumped into a wagon and drove rapidly in an opposite direction. When out of view, I took a side street back to the place of rendezvous. We could see the people coming down the street on a run; but I jumped out and made a rush for the horse, and although he was a kicking, runaway fellow that had not been harnessed in over two years, I succeeded in five minutes in making him sufficiently manageable to be hitched up without kicking. I had barely time to hitch him up before the wagon, when the people came up, and I took the chances, without further treatment, of driving him rapidly back to town. Upon arriving at the crowd, which stood waiting, I stopped him so quickly as to almost throw him upon his haunches, dropped the reins, and jumped out of the wagon. Being behind time, I made it an excuse for unhitching the horse where he stood; but the fact was, I did not dare to move him further, fearing he would kick, and thereby give me away. It is worthy of remark in this case, that upon trial next morning the owner found him perfectly gentle, hitched him to a carriage, took in his family, drove to town two miles distant, and used him afterward as a family driving-horse.

In the summer of 1864, I took into partnership Mr. E. C. Dudley, of Newton Center, Mass., who remained with me as business manager for four years, and who contributed greatly to my success.

As driving without reins soon became so common that it lost its novelty as a drawing card, I trained ponies to do sensational tricks. For these exhibitions I built suitable places covered with canvas, in cities and large country towns, frequently remaining several weeks in one place, and having remarkable success. In Buffalo, Toledo, Cleve-

land, and other large cities, the people came in crowds for weeks, and in some cases from distances of over one hundred miles, to witness the performance of the ponies, and to attend my lectures.

To illustrate the prejudice to which I was often exposed, I will refer to an incident which occurred at Cleveland, O. The city had at that time about 90,000 inhabitants, and its business community was among the most enterprising of the Northwest. They exhibited an unusual interest in fine horses, and their trotting-races were the most popular and liberally conducted of any in the country. I anticipated an unusual interest in my efforts there, and I incurred large expense in advertising the city and surrounding country, and in building a place for my convenience in giving exhibitions and teaching classes.

At the time appointed, there was a large attendance of leading citizens to witness the performance of the ponies; but to my surprise I could not get a single name for a class. Such a result was unprecedented in my experience. To have people go away without exhibiting the least interest in my efforts, was not only mortifying in the extreme, but discouraging. By the advice of the landlord, Mr. Stone, of the Commercial House, I sent twelve complimentary tickets to as many leading horsemen. On the following day there was again a large gathering; but as before, I could not get a single name—not one of those who were complimented coming forward, nor in any way manifesting the least interest in my efforts. Upon inquiry I found that eight of those gentlemen were present. I was now thoroughly provoked by such indifference. Something must be done, and that speedily, to make a stir, or I could have no hope of success. The thought of failure I could not entertain for a moment. It was necessary, first, that I should bring the people back again, and this I knew I

could not do by the ordinary pony performance; so to meet the emergency, I arranged to have a bet made of $100, that a certain negro boy there could ride "Tommy" without being thrown. This was announced in the morning papers, and as I expected, there was a crowd gathered to witness the trial. Judges and referee were appointed, and I put up the money. The condition was that he should ride him twice around the ring, or sit upon his back one minute, with the privilege of making three trials. The young man made a heroic effort to win, but was at each time ingloriously thrown.

The time had now come for a supreme effort, so I mounted a box I had arranged for the purpose, and made it. I closed up my remarks by offering $500 to any man who would produce a horse I could not subdue and drive gently within forty minutes. Up to this point I had not received a single name, nor did it seem possible to obtain horses to experiment upon. Finally, a gentleman named Edwards, a wholesale grocer on Water St., came forward, saying, "We think we know something about this matter. Rarey, Rockwell, and others have been here, and we think we know all and more than you can give us. But we have a horse here, which, if you can drive, as you say you can, you will convince us you can beat any man in the country." I answered, "Get the horse, and I will settle the matter very quickly."

The horse was sent for, and led in by a groom, and followed by the owner, a prominent citizen named Malone. At the last moment, he refused to let me have the horse to experiment upon; but rather than lose the opportunity, I bought him, paying very much more than he was really worth. I then said to the people, "I now have a subject, a horse that you all know cannot be driven in harness by any man in your city or State. If I do not drive him gen-

tle without breeching within forty minutes, every man joining my class can have his money back. I wish it distinctly understood that I do not ask for any favors, and will not grant any. I have tried to be reasonable, even generous, to the horsemen of this city, without having the least confidence or interest shown in my efforts by any one. I now wish it distinctly understood that I will not now grant any favors to any one, and will not ask for any. I have no friends here, and do not want any. I will show you now that I am able to win success without the help of any one. Every man remaining inside, except the members of the press, must represent $5. If I fail to do just what I promise, you can all have your money back before you leave. Not only this, but to-morrow at twelve o'clock precisely I will drive him on the square, without bridle or breeching, not only perfectly gentle in harness, but a trained horse to drive with a whip. If I do not do it, as I before stated, every man can have his money back." Thirty-five remained; and I drove the horse entirely gentle within thirty minutes.

It now became a question of great interest to know whether he could be driven on the square as promised. At 11 o'clock, I was notified that it was considered too dangerous to permit the experiment to be made; and in order to make the trial, I was compelled to give bonds of $1,000 as a guarantee that no harm should follow. At twelve precisely the horse was driven as advertised, in the presence of upwards of 30,000 people. This was followed by the largest and most enthusiastic class I ever made up to that time, numbering nearly 500 members. Every man now seemed to take a personal interest in my success.

The better to explain the general interest these experiments excited, I include paragraphs from a few of the press notices :—

"But the great sensation of the evening was yet to come; for all were anxious, as many present knew the vicious nature of the beast to be subdued—in fact, there were one or two present who had had good cause to ever remember the great runaway and kicker known as the 'Malone Horse.' He is a gray gelding, perhaps sixteen hands high, of great beauty and strength, and a will and determination rarely found in the purely American breed of horses. The horse was brought into the enclosure, and caused general comment by his magnificent style and grace of movement. His owner was present, and after looking at the animal a few minutes, and dreading to see him pass into other hands to manage, hesitated at the last moment to give his consent to the application of the system.

"Mr. Magner, determined to have a subject, asked the price of the horse, which was announced to be $500. 'I'll take him,' said Mr. M., and at once handed over the amount. This movement on the part of Mr. Magner was unexpected, as most 'horsemen' who have visited us generally preferred to 'work up' other people's horses, rather than their own.

"At this stage of the proceedings the excitement was intense, and many speculations were indulged in as to who would prove the victor, the man or the horse. In less than twenty minutes from the time Mr. Magner laid his hands upon his subject, the horse was as gentle as a lamb, and as easily controlled as the most reliable family horse. Among other efforts to prove that the gray gelding was completely broken, Mr. M., without reins in hand, mounted the wagon, and, catching the animal by the tail, drove him around the ring at a fearful pace, drawing the wagon upon the heels of the horse in such a way as to strike them with a force that could be heard at the furthest end of the room."—*Cleveland Leader.*

"Yesterday morning the famous 'Malone Horse' was hitched to an open wagon, with no hold-back straps, and driven up and down the street, at times at a 2 : 40 pace, and when suddenly brought up with the lines, would stop the whole weight of the vehicle with his heels—but no kicking now."—*Cleveland Herald.*

"A Serious Accident.

"While Mr. Magner was driving along the street following after the Arlington band wagon, people would call out to him, 'I say, mister, yer hold-back straps are gone! Yer'll have a runaway if yer don't look out;' and while crossing the railroad track on Ontario street, to avoid the jam of teams, etc., the rear wheels of his buggy were struck by a passing street car, the axletree so

bent that one of the wheels would not revolve, and the driver, buggy, and all precipitated forward on the horse, which, three days ago, one-half dozen men could not have held under such circumstances, but with no bad results further than stated. The horse did not seem alarmed, and bravely stood while the wreck was cleared away from the track, without so much as an offer to kick, fully proving the thoroughness of Magner's system.

"The people that thronged the street were attracted by that natural morbidity of the human mind which expects to be gratified by seeing some appalling disaster; but in this case they were most grievously disappointed, for instead of seeing the gray gelding 'mash things,' as was his wont, they only saw a splendid, docile animal driven by a gentleman who neither appeared alarmed, or expectant of any serious results from driving so gentle and speedy a buggy horse.

"At the close of the last lecture of his course in Cleveland, the the following resolution was moved by Hon. Silas Merchant (President of City Council), which was carried by acclamation of the entire class, comprising *one thousand leading citizens*:—

"'*Resolved,* That we, as members of Prof. Magner's class in this city, deem it but a just recognition of his skill and success in teaching us his system of educating horses, which is above all praise, hereby indorse him and his system to our friends and the public.'

GEN. J. W. FITCH, Kennard House.

R. P. WATERBURY, Akron Stove Co.

GEO. E. ARMSTRONG, of Alcott & Horton, Wholesale Dry Goods, 149 Water street.

SILAS MERCHANT, Iron Founder, River street.

L. B. FRENCH, of French & Keith, Wholesale Dry Goods, Water street.

S. S. COE, Sec. Cleveland Ins. Co., corner Water and Superior streets.

W. P. HORTON, of Alcott and Horton, Wholesale Dry Goods, Water street.

GEO. H. BURRITT, Collector of Customs, Custom House.

E. THOMPSON, Wholesale Grocer, Bank street.

W. D. CUSHING, Agt. Erie R. R., 131 Superior street.

WM. EDWARDS, Wholesale Grocer, Water street.

AMOS TOWNSEND, Wholesale Grocer, and Pres. City Council, City Hall.

R. COLLINS, Prop. Weddell House.

GEN. D. T. CASEMENT, Panesville.

GEO. WESTLAKE, Oil Refiner.

D. STONE, ESQ., Scoville avenue.

F. W. BELL, Wholesale Lumber Merchant.

C. W. COE, Prop. Cleveland Mills, 268 Scoville avenue.

H. P. WEDDELL, ESQ., Banker, Bank street.

And 1,000 others."—*Cleveland Leader.*

At Toledo, O.

"Monday, the last lesson of Prof. Magner to his class in Toledo was given. His success here has been unprecedented, and his teachings unparalleled in their line. What the members of the class have learned could not be bought of them for ten times the sum paid by them for the instruction. He goes to Adrian, Mich., from here ; and we bespeak for him there a hearty welcome and the usual success attending his efforts. The Professor is a man of his word, professing no more than he performs, and doing good wherever he goes. In his teachings, he not only instructs his scholars, but benefits the horses, by introducing a more humane and gentle course of treatment, and therefore merits the name of benefactor to the brute race, or a niche beside the renowned Bergh. We congratulate the Adrianites on their acquisition."—*Toledo Commercial.*

Buffalo Class.

The Buffalo, N. Y., class, comprising over 500 members, passed the following resolution unanimously :—

"*Resolved*, That we commend Prof. Magner to our friends as a reformer of more than ordinary usefulness ; that his theory of governing and educating horses is the most practical, humane, and valuable we have ever witnessed ; that it can be learned and practiced by any one of ordinary intelligence ; and that we desire to be represented through the following well-known prominent citizens, who can be referred to : Geo. W. Tifft, Esq., Judge Maston, Mayor Dickey, C. J. Hamlin, Esq., F. W. Tracy, Esq., Richard Bullymore, Esq., C. L. Whiting, Esq."

"As a practitioner and teacher of the art of taming horses, Mr. Magner is without a rival. No one can understand the seemingly magical power which this man seems to possess over the horse kingdom, until he witnesses one of his exhibitions. While in Toledo, he had in his classes many of our best citizens, and all not only feel fully satisfied, but indorse him, as will be seen, in the strongest manner.

"Happening into the tent one day, we saw the Professor training a noble, but desperately stubborn horse, owned by Mr. R. Mott. After operating with the animal but a brief time, his very nature seemed changed, and on being driven by his master, he was kind and obedient as the best of horses.

"The readers of the *Blade* can rely upon the fact that the Professor is an upright, honorable gentleman, possessing all the wonderful skill he claims."—*Toledo Blade.*

ADRIAN (MICH.) CLASS.

"During the present week, Prof. Magner, the celebrated horse-tamer and educator, has conducted his classes in this city. He has created a *genuine furore* among all interested in horses in this city; and his reputation has extended to a large circuit of country, and persons have attended his classes from over twenty miles distant. He has succeeded in subduing and rendering perfectly tractable some horses which have resisted all previous efforts of horse-breakers and others to reduce them to submission; and his wonderful power over horses excites the most astonishment from those the best posted in equine care and treatment, and the exhibitions of the trained stud of horses, which he owns and carries with him, are superior in interest to the choicest feature of the best circus traveling. In every place he has been, Mr. Magner has received the most emphatic and cordial indorsements.

"The following well-known citizens desire to state to their friends that they have attended several of Mr. Magner's lectures, and would say without fear of contradiction, that he is the Boss Horse-tamer of the world, and that he can do more than he advertises:—

WM. SNYDER, V. S.
HOWARD SICKLES, Livery and Horse Dealer.
A. H. RUSSELL, Horse Dealer.
COL. WOOD, Owner of Wood's Museum, Chicago.
CLEMENT E. WEAVER, ESQ.
CHAS. REDFIELD, U. S. P. O. Inspector.
BENJ. TURNER, Livery Keeper.
EDWIN P. SWORDS.
JOHN PRICE, Horse-trainer.
H. KNOWLES.
G. LIVESAY.
J. K. JOHNSON.
A. MAXWELL.
GEORGE MCNEIL.
M. E. ABBOTT.
J. TORNEY.
N. S. WHEELER.
J. S. MCNAIR.
A. H. BASSETT.
M. J. HOAG.
A. R. BAKER.
M. BRAZEE.
RALPH ABBOTT.
DR. ROBERTS.
F. MEDDICK.
H. DAXTILL, Livery.
J. H. EMERY.
J. S. SMALLEY.
W. R. TAYER, Sheriff.
JOHN WEBSTER, Sec. Gas Co.
And 400 others."

—*Adrian Weekly Times.*

JACKSON (MICH.) CLASS.

"Prof. Magner gave his last exhibition and lecture in this city on Saturday afternoon last, and, as usual, a large number were in attendance. There were at least two hundred members of his

class present to listen to the closing lecture, and witness some of his wonderful feats of subduing and managing horses. At the close of the lecture, one of the members of the class offered the following resolution, which was received with applause, and adopted without a dissenting voice :—

"'*Resolved*, That we, the members of Mr. Magner's class, hereby express to him our high appreciation of his instructions in his system for the reform and elevation of horses, which, in our estimation, is incomparably superior to any system ever brought before the public. By this system, the management of the horse is reduced to a definite and exact science, and we desire most heartily to commend Mr. Magner to the confidence of the public, to express to him personally our thanks for his patience, his thoroughness, and his gentlemanly bearing, while engaged in his profession in this city.'

J. H. NOYES, Mayor.
W. L. SEATON, Postmaster and Member of the City Council.
D. B. HIBBARD.
S. S. VAUGHN, President Horse Breeders' Association.
D. J. ROBINSON & A. V. PANTLIND, Props. Hibbard House.
DR. G. CHITTOCK.
M. KNAPP, Livery Keeper.
J. A. HIGGINS, City Express.
B. G. JOHNSON, Member City Council.
J. BROWN, Member City Council.
ROBT. KNOWLES, County Clerk.
A. VANDERCOOK, Member Council.
CHAS. MESEROLL, City Marshal.
JESSE HURD, Owner of Track.
JOHN GOODYEAR, Livery and Sale Stable.
C. C. POND, Broker and Stock Dealer.

And 300 others."—*Jackson Patriot.*

When the panic of '73 set in, I found it impossible to do business in large centers, and I was compelled to make a complete change by traveling in the country and remaining but one day in a place. As a feature of interest at this time, I advertised driving into town, the day before my lecture, a stallion without reins, followed by another (Blind Billy) loose in the street; and the next morning, before forming a class, I gave a regular exhibition with the ponies. It was frequently surprising to note the interest these performances excited. The country people came in crowds.

After traveling over the Eastern States before referred

to, I went to Ohio, where I became acquainted with R. P. Hamilton, a very unique character, who was engaged in the horse-taming business. He was a natural showman, and combined with his performances, tricks of legerdemain. Though very successful at the time, his modes of treatment were extremely limited.

Yet to this man belongs the undoubted honor of originating the idea of throwing, on the principle of the First Method. But his way of doing it was so crude and imperfect that there was almost constant danger of seriously injuring or killing the horse. The leg was tied up as done by Rarey, and a surcingle put on in the same manner, with the addition of back band and crupper attached. The end of the cord was tied around the neck, as for first form of War Bridle, thence through the mouth, and back through the ring on the surcingle.

When the cord was pulled upon, it would necessarily rake so severely across the mouth that, if it was at all sensitive, the horse was liable to rear up and throw himself over backward; while if stiff-necked and dull-mouthed, there would not be sufficient power to pull the head to one side. If pulled upon straight back, on a line with the body, as he was in the habit of doing, the difficulty and danger would be still greater.

These objections I overcome by putting on a halter with the strap back of the jaw, drawn rather tight, over which I pass a cord, and to increase the purchase, tie the end around the surcingle above the ring. This improvement not only more than doubles the purchase power upon the head, but entirely overcomes the objection of hurting the mouth. In this way the horse was brought off his feet and upon his side as desired, thereby proving it to be not only a simple and safe but very powerful means of subjection. See illustrations on pages 371–376.

Very soon after publishing the first edition of my little book for my classes, I found it not only too small, but imperfect; so in 1865 I made a revision of it, greatly improving and enlarging it. But with a constantly increasing experience and success, I very soon felt the necessity for still another revision, which I made in 1867. Revisions were again made in 1869, '71, and '75; thus enlarging the book for my classes from a small pamphlet of 64 pages, as first published, to a work of 276 pages, quite largely illustrated, as it now stands. There have been fully 100,000 copies of these various editions issued, and given to my classes.

During my early experience, my advice was asked almost daily in regard to the cure of some form of disease of horses. Though continually admitting that I knew nothing about the diseases of horses, I would be pressed to give such advice as I could. Consequently I read such books on the subject as were available, but practically could make but little or nothing out of them, as the treatment would be either contradictory or too indefinite for reliability. What would perhaps be highly recommended by one authority, would not infrequently be condemned by another.

I came in contact with a great many horse-doctors who claimed to have remedies of great value for the cure of spavins, ring-bone, etc., and at various times I was induced to pay considerable money for recipes, etc., that proved not only worthless, but really dangerous. There are doubtless many who, though not regular practitioners, are geniuses in their way, and worthy of entire confidence; but my experience has been that men who claim to have wonderful secret cures, and who aim to sell a little medicine for a large price, are unreliable, and should be avoided.

These circumstances led me to employ one of the best veterinary surgeons I could find to give me a private course of lectures, which was to embody his best treatment for the most common forms of disease. The best remedies used in this gentleman's practice, as well as those obtained from many other sources, I afterward published in the Medical Department of the "New System," and they will also be found embodied in the same department of this work.

My health finally becoming seriously impaired, I was compelled to stop business for a while, or so arrange as to lessen the strain to which I had been so long subjected. Having too many trained horses, I sold six stallions, comprising four horses and two trick ponies, all trained to drive without reins. Three of these (one being the "Fred Arnd Horse," referred to in the chapter on Stallions) were sold in Bath, N. Y., and vicinity. One of the matched pair and a pony were sold to O. S. Pratt, of Batavia, N. Y., and the other to a man named Graves, of Lockport, N. Y.

This last pony was a superior performer, and I sold him with the special stipulation that when he desired to part with him, I should have the first chance to buy; yet notwithstanding this stipulation, he sold the pony to Pratt. I still had two of my best horses; and, having made arrangements with a man who had traveled in the South, to assist me there, I shipped directly to Memphis, Tenn., and traveled in the South nearly two seasons.

I have at various times been greatly annoyed, and my business much injured, by parties engaging in the business and copying my bills, claiming to be authors of a New System, etc. One of the boldest of these, and the only one I will refer to, was the man Pratt, who is now deceased. The sale of the horses to him was made on the condition that I should teach him how to manage them, and also in-

struct him in the business sufficiently to enable him to travel, to which I devoted about a week's time. Returning North with improved health, I reorganized my business so as to strike only large centers, and was so engaged in Michigan in the winter of '72, when business requirements demanded my going to New York. Somewhat to my surprise, I found Mr. Pratt located in the city, advertising himself as the "Great Horse-tamer of the World, the Author of a New System," etc., and resorting to the boldest methods of charlatanism, such as buying articles and arranging to have them presented to him as if voluntary gifts from his classes, etc. This role he played quite successfully in Philadelphia and other cities.

Calling upon him at a time when there were a number of other gentlemen present, he addressed me as though I were but a casual acquaintance, saying, "Magner, I have the best trained horses in the world, and the best system in the world." Such presumption on his part aroused my indignation, and I determined to show him up.

Before I started him in the business, he did not pretend to know anything more about horses than he was able to learn from ordinary observation, and experience of driving one to a grocery wagon. I simply said to him, "I think you have carried this matter too far, and now I shall make it my business to show what you can do."

Being entirely unknown there, I found myself confronted with great difficulties. In the first place, New York is the great metropolis of the country, and its horsemen undoubtedly are the most skillful and critical in the world, well read, extremely practical, with the broadest and most varied experience. In horse-taming, they had seen Rarey, Fancher, and Hamilton. They had now had in the city, for over three months, Pratt in one part and Mr. Rockwell in another, both making the most extravagant

pretensions. Hamilton won very general attention, but his success was destroyed by killing two valuable horses, and seriously injuring others. Pratt's extravagant pretensions attracted some notice, but upon trial he revealed himself to be an ignorant pretender, to whose management they soon learned not to trust a good horse. Rockwell was a man of much experience, a good horseman, and was well calculated to make friends and win success; but his instructions did not add much to their knowledge. The result was, the people felt they had nothing more to learn from professed horse-tamers, and had so far lost confidence in them that they would not trust a good horse to them for treatment.

Under such circumstances, it could not be expected that a new applicant for favor would receive much attention; but I was bound to make the effort at all hazards. After careful deliberation I determined to enlist the attention of some leading horseman, whose standing for skill and veracity would be above question. Mr. Robert Bonner was the gentleman. With considerable difficulty, and without announcing my name, I was finally able to obtain admission to his presence, when, without any preliminaries, I said to him, "Sir, I will forfeit $1000 (which amount I held in my hand), which you can retain, or devote to any benevolent purpose you please, if I cannot take any horse that any horseman or horse-tamer in the city or outside of it, living or dead, has failed upon, and make him perfectly gentle in forty minutes, without throwing or whipping, and within the limits of even a box stall." Looking at me in surprise, he asked, "How can you do it?" I replied, "It will take about four minutes to explain." He said, "I will give you five." But becoming interested, the interview was continued nearly an hour, when he expressed himself as very desirous of seeing me make the experiment.

Upon inquiry, I learned of a horse that was brought to Pratt with orders to break or kill him, as he was good for nothing unless he could be broken. The horse resisted, and not wishing to acknowledge his defeat he resorted to the most persistent as well as severe treatment in order to exhaust and break him down. But after a week's effort he utterly failed, and the owner was told that the horse had no brains, and could not be broken. I could obtain no particulars in relation to the appearance or disposition of the horse; but knowing what Pratt would do, and the kind of horse he would be likely to fail upon, I was confident, if able to obtain the horse, of experiencing no difficulty in his subjection. I accordingly found the owner, Mr. Wilkins, a well-known dealer in fine horses. Upon introducing myself and stating my business, the gentleman became greatly excited, and said he didn't want anything more to do with horse-tamers, etc. I simply asked him how much his horse was worth. His answer was, "He is not worth anything now." I said to him, "I want your horse at Mr. Bonner's stable to-morrow morning at 10 o'clock to experiment upon, on the following conditions: First, I will deposit $1000 in Mr. Bonner's hands, which you are at liberty to take if your horse is injured; second, I will give you an additional hundred should I fail to make him gentle in forty minutes. Can I have him on these conditions?" He answered, "Yes; I will have him there on time." Upon trial the experiment proved a success, the horse submitting in about thirty minutes. Particulars of this incident will be found in Case No. 6, Subjection.

I now felt certain of being able to enlist the attention of the horsemen of the city, and built a place suitable for giving test exhibitions, and invited by card the attendance of leading horsemen. When assembled, I requested them to appoint a committee of such gentlemen and expert horse-

men, not exceeding ten in number, as would be above suspicion of not giving a fair and impartial report on the merits of my claims, before whom I would make such experiments as would be necessary to explain and illustrate to them my system of treatment. By invitation, the Cooper Institute Farmers' Club also appointed a special committee of three to report to the Club the result of the experiment. The result of the experiments will be shown by the subjoined editorials and reports :—

From N. Y. Sunday Democrat.

A NEW ERA IN THE EDUCATION OF HORSES.

A WONDERFUL EXHIBITION.

On Friday evening Mr. D. Magner gave an exhibition, to which none but invited guests were admitted. Among the horse-fanciers present were Robert Bonner, Dan Mace, Ed. Wilkins, J. D. Walton, George Lewis, Jacob Creveling, Amos Little, Dave Bonner, W. S. Ridabock, R. J. Anderson, Arthur Gillender, Walter Briggs, W. Jackson, Jo. Bennet, N. H. Leadbetter, Jacob Baulch, James Moffatt, William Rutzer, Dr. Ogle, Dr. Brighton, of Boston, Dr. Lee, Henry Casey, J. C. Durant, Isaac Sonburg, Dr. O'Shea, Hamilton Busbey, William Watson, of Westchester, with his two sons, William Apgar, C. Moran, jr., Dr. Beadle, James Morris, E. H. Freeman, and M. Bain.

After exhibiting some extraordinary tricks by his trained horses, Mr. Magner requested them to choose from those present a committee to report on his system. The committee selected consisted of Messrs. Robert Bonner, *Chairman*, Charles Swift, jr., *Secretary*, Dan Mace, Amos Little, Arthur Gillender, Geo. Lewis, J. D. Walton, James Moffatt, W. W. Briggs, N. H. Leadbetter, and others.

The committee having taken their seats, Mr. Magner, in a brief address, explained the main points of his treatment. . . . In the course of his remarks he very justly stated that more men than horses require training. A notoriously vicious horse was then brought into the ring, and in less than thirty minutes he was trotting in harness as gentle as though he had always been a family horse, and this, too, without throwing or harsh treatment. Mr. Bonner, turning to the committee, said, *Rarey taught us our A B C, but Magner teaches us how to put the letters together.* At the close of the exhibition the following

AUTOGRAPH LETTER FROM MR. BONNER

was handed to a representative of this paper:—

OFFICE OF THE LEDGER,
New York, Jan. 25, 1872.

Mr. D. Magner:

DEAR SIR,—From the conversations I have had with you, and from the satisfactory manner in which you handled Mr. Wilkins' horse to-day in my stable, I have no hesitation in saying that I consider you THE MOST SCIENTIFIC AND SUCCESSFUL EDUCATOR, OR TAMER, OF VICIOUS HORSES I HAVE EVER MET. Mr. Wilkins' horse was a most vicious brute; he would kick with more spite and determination than any horse I ever saw, and at the same time he would strike with his forward feet; indeed, Mr. Wilkins himself told me that he was, to use his exact expression, "the worst horse in New York." In less than an hour you succeeded in handling him as freely, and with as much apparent safety, as you would any ordinary family horse.

I have myself handled Princess, the famous old competitor of Flora Temple, on your new system; and, although she was at one time so vicious as to be almost unmanageable, my youngest boy, a lad of fifteen, has, during the past week, been driving her daily in the Central Park. *All things considered, your treatment is, in my opinion, entirely new and reliable, as well as humane and practical.* Yours truly,

ROBERT BONNER.

In a conversation subsequent to the exhibition, Mr. Bonner stated that if he could have made his letter any stronger, he would have done so.

COMMITTEE REPORT.

April 9, 1872.

We, the committee appointed by the citizens and prominent horsemen of New York to investigate and report upon the merits of Mr. Magner's system of training and educating wild and vicious horses, respectfully report that we have exerted every effort in our power to obtain horses of such a bad character as would test the practicability of his treatment, and secured a thorough-bred mare, owned by L. C. Popham, of No. 945 Broadway. This mare was fourteen years old, and had resisted all efforts to control her in single harness; would kick herself free from shafts, and run away at all hazards. Also, a thorough-bred gelding, sixteen years old, owned by H. L. Herbert of Red Bank, N. J. He would balk while riding, kicking and running away while in harness, and was so vicious that he could not be driven or controlled in harness; was purchased by Mr. Herbert for $2,500;

proved so worthless that he sold him for $150, and afterwards repurchased him for $25. Also, a fine Star mare, owned by R. L. Pell, Esq., of Fifth Avenue and Twenty-sixth street; would kick herself free in single harness, and would run away. This mare could not be driven single. These, with others, were handled in our presence, including a large number of prominent citizens and members of the press, all of whom were invited to witness the experiments proposed to be made before this committee.

In eighteen minutes (without throwing or any cruelty) Mr. Magner made the Herbert horse so docile that he could be driven with the greatest freedom without breeching, demonstrating the most wonderful change in his character. The owner publicly stated the fact of his former vicious reputation and unmanageable habits. The Popham mare was driven with equal success in twenty-seven minutes, submitting to all kinds of handling, even from strangers. The Pell mare was next handled, and driven gently in ten minutes, and the other horses with the same marked success.

We have carefully studied the merits of this treatment, and have no hesitation in saying that *Mr. Magner is the most skillful and successful horse tamer and educator who has ever visited this city.* His method of treatment reduces the subjection and education of horses to a definite and fixed science, and is in principles and effect entirely superior to any other ever brought to our notice, and inaugurates a new era in the subjection of horses. The great ease and certainty with which horses of extreme viciousness can be controlled by this treatment make the knowledge of it indispensable to all interested in horses, particularly to farmers and those who raise colts. These facts induce this committee to recommend all who can to attend Mr. Magner's lectures, and obtain a copy of his book.

Geo. Lewis, Proprietor Sale and Boarding Stable, 50th street.

J. D. Dunwalton, Proprietor Boarding and Sale Stable, 39th street.

Dan Mace, Proprietor Sale Stable, 49th street.

W. W. Briggs, Proprietor Tattersall Stable, 7th Avenue and 42d street.

Arthur Gillender.

N. H. Leadbetter, Proprietor Livery and Sale Stables, 7th Avenue and 45th street.

James Moffatt.

Robert Bonner, *Chairman.*
Charles Swift, Jun., *Secretary.*

The following well-known gentlemen, with one hundred others, fully indorse Mr. Magner's system as the best and most humane they have ever witnessed:—

Frank D. Curtis, Esq., Vice-President State Agr. Society, Charlton, Saratoga Co., N. Y.

David Bonner, Esq., Brother of Robert Bonner.

G. Chapman, Esq., Inventor of Chapman's Patent Safety Reins.

E. H. Hathorn, Proprietor Boarding and Sale Stable, 38th street, N. Y.

Ralph Ogle, V. S., 330 W. 25th street, N. Y.

L. H. Braily, V. S., Chief Veterinary Surgeon, U. S. Cavalry.

D. Costello, Esq., Great Circus Proprietor, with P. T. Barnum's Show.

J. E. Wilkins, owner of vicious horse mentioned in Mr. Bonner's letter.

Budd Doble, Driver of Goldsmith Maid, South Penna. Square, Philadelphia, Penn.

O. H. Hickok, Driver of Lucy, St. Elmo, and Western Girl, Coleman House, N. Y.

Frank Leslie, Esq., Publisher of Frank Leslie's Weeklies, etc.

James Harper, Esq., of Harper & Bros., Publishers.

Rev. Dr. Field, Editor N. Y. Evangelist.

Sidney E. Morse, Esq., Publisher N. Y. Observer.

Rev. E. P. Roe, Chaplain in Harris's Light Cavalry, now of Highland Falls, New York.

Report of Committee appointed by the New-York Cooper's Institute Farmers' Club.

As requested, we attended Prof. Magner's exhibition on Tuesday, April 9, in connection with a large number of gentlemen, including a committee appointed by the horsemen of this city. Several horses of the most vicious character were subjected to treatment in our presence with most remarkably successful results. Mr. Magner's system is in principle entirely different from that of Rarey, or any other principle of taming horses we have ever witnessed. It is remarkably simple. A noticeable feature was, that none of the horses experimented upon were in the least excited or heated.

While this treatment reduces to the lowest degree cruelty and abuse, it secures the most positive docility of even the most vicious horse in a remarkably short time; the most vicious horse sub-

jected to treatment before us not requiring more than fifteen minutes' time to make entirely gentle.

We have no hesitation in saying that Prof. Magner has even more than sustained the high position he has assumed before this Club, and that he is a reformer of great merit, deserving of the encouragement and assistance of all who desire the interests of society in the humane and skillful treatment of horses.

SERENO EDWARDS TODD, *Chairman.*
JOHN W. CHAMBERS, } *Committee.*
D. S. MOULTON, }

When the committee made the above report to the Club, which as first made incorporated the details given by the other committee, they were laughed at, it being almost unanimously believed that it was impossible for me to control horses as claimed. In fact, it was supposed that the committee were badly imposed upon and fooled. To vindicate themselves, the chairman, Mr. Todd, called on me early the following week, and made a very urgent request that I would go before the Club at its next meeting and sustain them. I did so, and gave such proof as convinced all of the correctness of the report. In introducing me to the Club, Mr. Todd made the following very complimentary remarks :—

"We are living in an age when there is a moral sublimity in our existence. Illustrious kings and sages, who have slept with their fathers for centuries past, looked down the long vista of time to this auspicious day with longing desires to witness what our eyes behold with delight; but they died without the joyful sight. We are living in the twilight of millennial glory. The triumphs of mind over material things have never before been so magnificent and so glorious as during the latter part of the nineteenth century. The galling yoke of tyranny and oppression, which has rested with crushing weight on the unfortunate sons of Ham for ages, has been broken off, and they are now being elevated to the realm of a higher life. The cruel club law, which has maintained a reign of terror throughout the peaceful domain of our dumb animals, has been doomed to the charnel-house by the philanthropic efforts of President Henry Bergh [enthusiastic cheers], whose illustrious name will descend to prosterity with other worthies,

crowned with diadems of terrestrial glory. Over and above all these, our session is honored with the presence of Professor D. Magner, a most efficient promulgator of the gospel of peace among our dumb animals. [Renewed cheers.] He has come freighted with messages of mercy and affection to the whole equine race—the noble horse—one of the noblest servants of the human family, whose sagacity and intelligence entitle this species of animals to be designated as the connecting link between human intelligence and the brute creation. He is a worthy missionary, proclaiming the glorious reign of peace to the long-abused horses of our land. He proposes to *educate* these faithful servants of mankind. The magnificent exhibitions of his competency to teach our dumb animals to render cheerful service furnish the most satisfactory evidence that his credentials are almost supernal. [Cheers.] Good old Paul once came with messages of love to the ancient Jews, who disdained his high commission. Here comes a modern Paul to inaugurate a work which must be accomplished before the auspicious day of millennial glory can be ushered in,—our excellent secretary, who has seen and heard and believed in the joyful news to the horses of our country, and

> I go with Paul, as every one supposes;
> As for the Jews, why they may cleave to Moses."

[Prolonged cheers.]

Taming Horses.

At least we have one man who professes horse-taming, and who at the same time rises above the vulgar tricks of the charlatan. His name is Magner, and at the present writing his tent is pitched in this metropolitan city. He seems to have given honest study to his art, and to have brought a high degree of intelligence to the study. He regards the horse not as a dull, stupid piece of clay, but as an animal able to draw deductions, and to be molded by firmness and kindness. He appeals to the understanding, endeavors to make an impression on the brain, and to show cause for every effect. His system is his secret, so we cannot go into an elaborate explanation. We have seen him operate, and we confess that we admire his skill. His best subjects are those which the charlatans pronounce the worst. His system is based upon logic, such a system as is worthy of a controlling power. Mr. Magner can cure the very worst cases. We honestly believe that there is not a horse in the world which he cannot make gentle and obedient. He boldly challenges any one to produce a horse that he cannot handle.—*Turf, Field, and Farm.*

A notoriously vicious horse was brought into the ring, and in less than thirty minutes was trotting in harness, as gentle as though he had always been a family horse, and this, too, without throwing or harsh treatment. Mr. Magner, standing on the axle of a pair of wheels, drove the horse about the ring by the tail, no sign of ill-temper being manifested.—*Frank Leslie's Weekly.*

The panic of '73 compelled me to again change my method of doing business; and now commenced one of the most laborious periods of my life. The people of large centers becoming pecuniarily embarrassed, I was compelled to avoid such towns, and confine my efforts almost wholly to the smaller country towns, where I could reach the farmers more easily.

The belief was general among the people, that, back of my open efforts, there was a considerable degree of humbug, which, if they joined my class, they felt bound, if possible, to find out and expose. No matter how thorough the instructions, the measure of their satisfaction would be determined only in the subjection and driving before them of the most vicious and dangerous horses that could be found. These difficulties can be better understood when it is stated that the time for instruction was necessarily limited to from two to three hours; and that I was frequently compelled to teach classes in unsuitably small, inconvenient places.

This made it not only extremely difficult, but dangerous, to make the necessary experiments even upon ordinary cases; and when compelled to take in hand a horse of an exceptionally vicious or dangerous character, while surrounded by a crowd of men in such a small place, the greatest care was needed to guard against accident; for should a horse resist or break away, there was liability of its resulting in serious harm. This was most to be apprehended in handling wild, kicking colts and horses. Though I never had any serious accident from such causes,

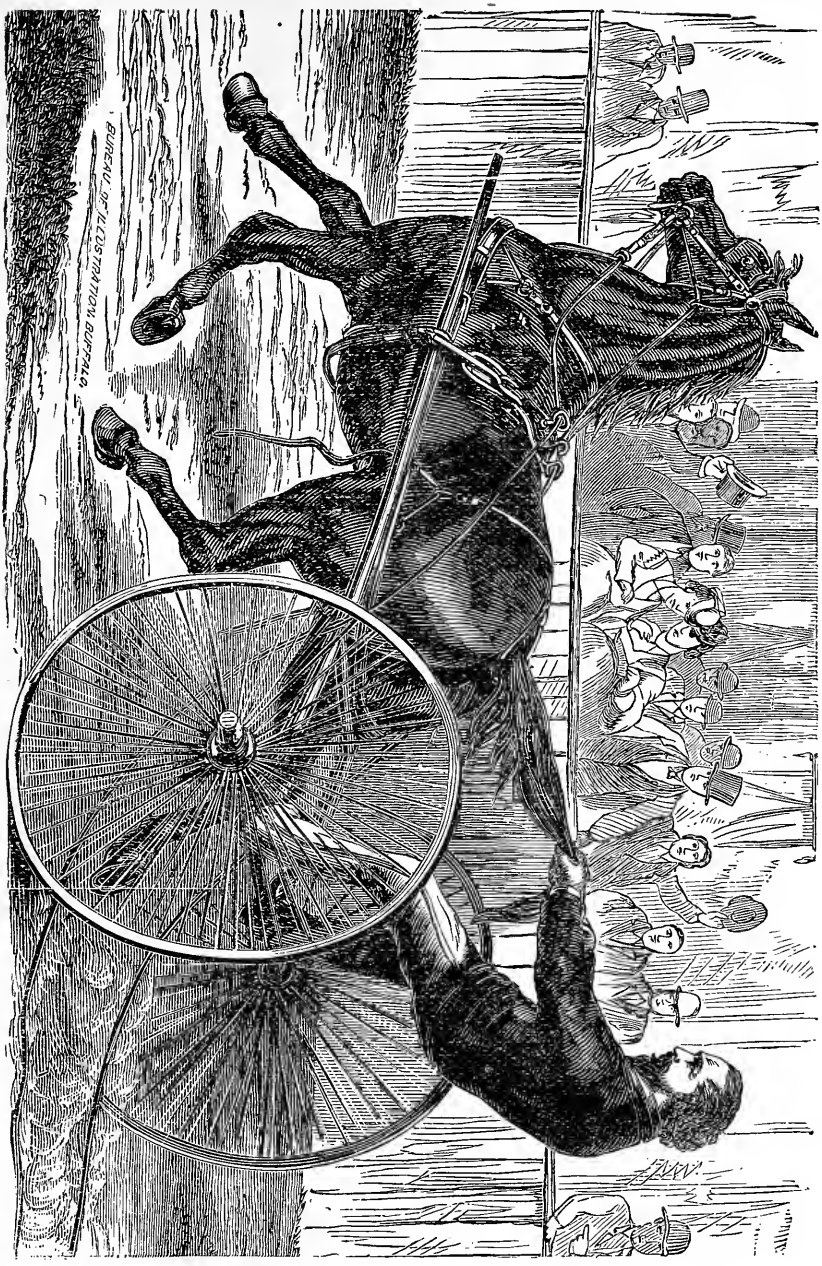

FIG. 319.—A test usually given before the class.

the anxiety to which I was frequently subjected in consequence was very great. I will give the particulars of one case:—

At North Pownal, Vt., a strong, large-boned, compact, gray horse was brought in for treatment. His only bad habit was kicking when the harness was put on. When shown a harness, he would kick and jump in the most furious manner, and continue to do so regardless of all restraint. He was one of the most desperate horses of this character I ever saw. I had a class of about one hundred persons crowded in a large carriage house, with no opportunity of getting out of the way. The doors were closed on the outside, and guarded by a watchman who kept the crowd away.

At the time, I was greatly prostrated, and compelled to depend upon an assistant to make the experiments. This man some time before had one of his arms seriously injured, from the effects of which he had not yet recovered. There would have been but little difficulty in subduing the horse by the regular treatment; but as it was necessary to illustrate the First Method of Subjection (throwing), and as we had no other subject before us, we were compelled to illustrate it upon him.

I told my assistant that this was an extremely dangerous case, and in his present condition I was afraid to trust the case to him. He insisted, however, upon making the experiment, saying, "I can manage him." Yielding at last, I repeated the caution that he must take no chances. I saw that the horse was held firmly until the rig was securely on and all was ready, when, before he could resist, he was thrown easily and squarely upon his side. But the strength and vigor of the animal was so great that he had scarcely struck the ground before he made a spring that brought him fairly upon his feet. He instantly leaped

into the air, kicked and pulled away, rushing around the enclosure, jumping and kicking with all the fury of a mad horse. He jumped at least eight or ten feet at a bound, and instantly he was nearly twenty feet away, having kicked four or five times, and was right upon the crowd.

The people, screaming and tumbling over one another, strove to get away, but they were cornered, for the next bound of the horse was sure to bring him upon them. The instant he passed me, I jumped for him, and, fortunately, was able to grasp him by the head; being on the inside, as it were, of the circle, the momentum of the jerk upon the head sideways stopped him so quickly as to throw him squarely upon his side.

Had I failed to catch and control him, he would undoubtedly have injured or killed a number of persons. I now took him in hand, and, with the aid of my assistant, soon made him stand quietly to have the harness put upon him, though he resisted the utmost of extreme treatment before submitting.

Another great and frequent cause of embarrassment to me was, after subjecting a horse to treatment before a class, it was supposed that if the system was good for anything, he must perform equally well out of doors. As frequently explained, a horse must be subjected to treatment out of doors in order to insure his working there. If subjected to treatment in a building only, when taken into the streets where he has been in the habit of resisting, he would be liable to show as much fear and resistance as though not subjected to treatment at all. To let the horse resist under such circumstances would be fatal to my success. Still this proof was in most cases demanded, and had to be given.

I have frequently referred to this difficulty in different parts of the work, particularly in the last chapter—Familiar

FIG. 299.—As some vicious horses were frequently led in to be experimented upon before the class.

Talk; but I will also refer to representative cases in point here.

In my early career, and just before my experiment upon the "Roberts Horse" at Utica, N. Y., I visited Clinton, six miles distant, where I had a large class. Among the subjects brought in to be experimented upon was a large bay horse, which had resisted every effort to ride him. I was soon able to get upon his back and ride around

FIG. 300.—One of the tests usually given after subjection.

the barn without his giving any sign of fear or resistance. Understanding his treacherous character, I knew that he could not be safely ridden outside. But regardless of my protests, the owner and entire class insisted that I should ride him out of doors.

Finally yielding to their demands, the door was thrown open and I rode him out. He would have continued gentle, but the owner, as I was afterward informed, getting angry because the horse was acting so well, gave him a sharp kick as he went by him through the door. This caused

the horse to spring furiously forward, and as I could not restrain him, he bounded headlong over a big wagon loaded with fodder, which stood in front of the door, and came down near the hind wheel.

There was a high, crooked rail fence running parallel with his course, to which he ran so close that the ends of the rails almost touched my leg. To remain on would

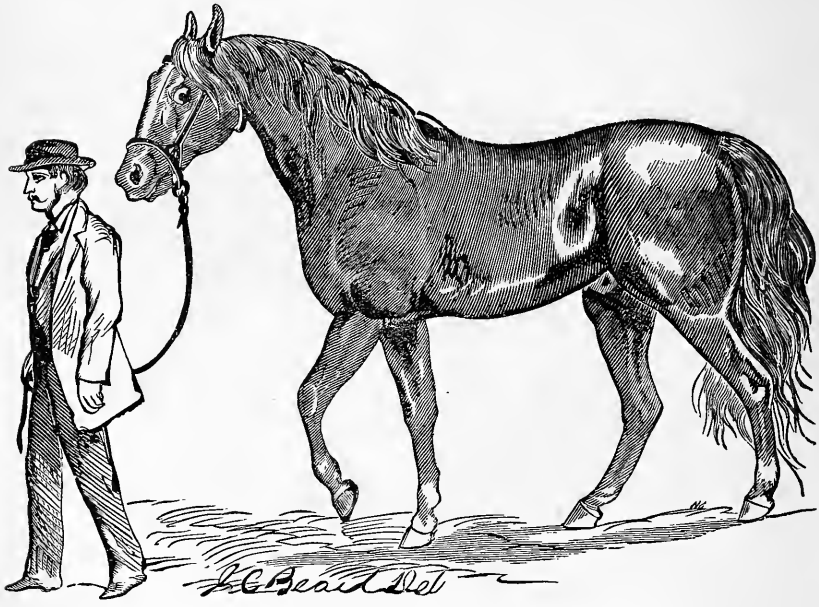

Fig. 301.—As usually led home after treatment.

endanger my being torn off, and to avoid this, I jumped off. The horse, being soon secured, was brought back, and I again subjected him to treatment in the barn, after which I rode him outside, as desired. The incident impressed me as being so ludicrous that I give an illustration of it.

When at Sugar Grove, Pa., a pony mare of so balky a character that she had not been driven in harness for years, was the only subject for experiment. I was careful

to explain that a horse of this character could not be broken by any treatment I could subject her to in a barn; that she must be treated in the street, or where in the habit of balking, when her management would not be at all difficult.

I had a large class, and after a few minutes' treatment, I was able, without difficulty, to drive her in the barn

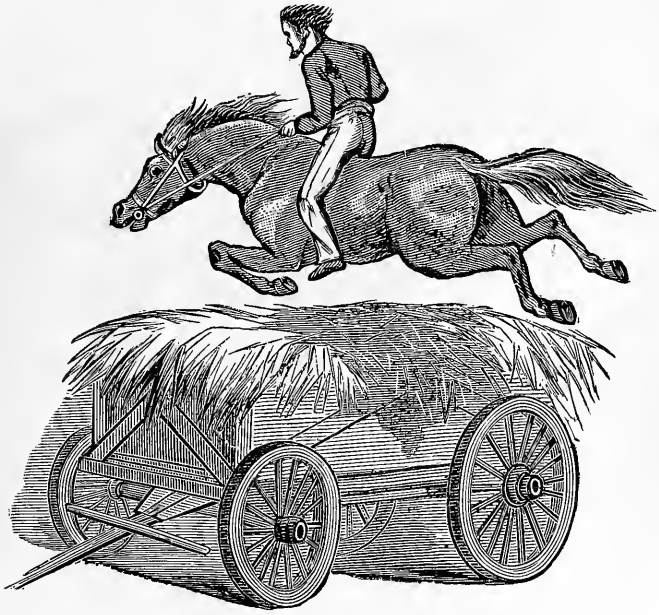

Fig. 302.—As the horse jumped over the wagon.

perfectly manageable. But at the conclusion of the lesson, the class insisted upon my driving her in the streets as a condition of their being satisfied. I saw at once a preconcerted purpose to break me down, as an excuse to get their money back, and I determined if possible to outwit them. It was impossible to obtain the privacy to handle her outside as I desired, since there was a clamorous crowd watching every movement; and in addition, a violent rain-storm had set in.

I reminded them that it would be unpleasant to go out in such a storm, even though I could obtain the privacy necessary for the handling. But they expressed their entire willingness to stand the storm, and insisted upon the action; so I said, "I will go to the outside of the town and subject the mare to treatment, then drive her back to the hotel without her balking, if that will satisfy you; but you must go out and keep the crowd in the road." To this they agreed.

I then directed the class to go in a body to the gate, and keep the crowd back as I passed through, promising not to keep them waiting more than five minutes. But regardless of the storm and opposition, the moment I passed beyond the gate, the crowd went right and left over the fence after me; and the class also, being anxious to see what I would do, followed in a body. Finally, by the aid of the class, I succeeded in holding outsiders in a circle of about fifty feet distant, when I subjected the mare quickly to the Second Method.

Having everything ready, I hitched her to the wagon before she could concentrate her purpose to resist, jumped in, and gave her a sharp touch with the whip, at the same time pulling the near rein, when she started off on a trot, then on a run, in a circle around the field. This accomplished, I told them to open the gate, or I would drive over it. The cracking of the whip, and the yelling and shouting from the crowd of men and boys following, were sufficient to frighten the mare into going back to the hotel all right. I then jumped out, saying, "I guess that will do." All laughed good humoredly, saying, "He did it. It is all right."

The severe shower made a reasonable excuse for the quick rush. The real difficulty was in not having sufficient privacy or opportunity to subject her to treatment for

balking; and once having made the effort, it would have been necessary to have driven the mare at their dictation, which would have resulted in certain defeat.

During my experience in this business, while there was often much that caused me extreme annoyance, yet there was still oftener much that gave me interest and courage in my work. Upon retrospection, I am reminded of many phases and incidents connected with my experience that will always remain fresh in my memory as constantly recurring sources of pleasure and encouragement. There are also many men to whom I feel under such deep obligations for kindnesses shown me, that I would be glad to express my thanks to them personally if I knew their address, and would deem it a great pleasure to remind them of it by sending them copies of this book.

Almost daily, my professional experience was a mixture of both comic and serious difficulties. Many people would come out to see the ponies perform, without any purpose of joining the class, as they thought what I advertised could not be true, fearing that I had the power, if they came near me, to deceive them and pocket their money. Some even went so far as to say that they would not believe I could do what I had advertised, even though they saw me do it.

But when such were finally induced to join the class, they were usually the most interested, and not infrequently thanked me for persuading them to do so. On expressing their approbation of my system to their neighbors, and advising them to join the class, they would in turn receive a shake of the head, as if to say, "He has pulled the wool over your eyes, but he cannot do it with us." And what appeared strange, was that all this could be, regardless of the fact that to every man was given a personal guarantee that if I failed in any respect to do just what I

advertised and promised, he could demand a return of his money. I was often compelled, on this account, to do more than I advertised, to be sure of satisfying every one. Sometimes, during my early experience, I lost scholars, and occasionally whole classes; but later on these cases became less frequent, and still later I lost none at all.

A frequent cause of difficulty was in having no suitable place in which to handle horses, or no suitable subject upon which to illustrate treatment; or I was limited to the subjection of a particularly obstinate or difficult case, that could give no correct idea of the effect of the treatment upon average cases, thereby making it difficult for people to understand the value of my system. By way of illustration, I will refer to two cases in point:—

When at Onionta, N. Y., in my last run through the State, I had a large class. The only case brought in for treatment was an extremely bad, kicking mare. This was very embarrassing, on account of inability to illustrate the effect of but one method of treatment, and that on the most difficult subject possible to handle before a class; and also because they supposed this would represent the effect of the treatment upon horses generally. While no one found fault, I felt there was not that impression of satisfaction and interest usually manifested. At Milford, two days later, a member of the class referred to told me privately that one of his neighbors was decidedly dissatisfied, and felt that the book was really all he had received for his money. The man offered him $2.50 for it, but $3.00 was the lowest price he would take.

During the evening, a four-year-old colt, one that had never been haltered, entirely unbroken and wild, was by chance up near the house, when the thought struck him to see what he could do with it. In ten minutes he had the colt gentle to handle, and following him in any manner,

allowing himself to be ridden, the feet taken up, etc. In fact, he did with the colt anything he pleased.

He had a five-year-old colt that was very much afraid of hogs. The result of this experiment was so gratifying, and gave him so much confidence, that he thought he would see what he could do with this second one. In less than fifteen minutes, he was so successful that he was able to lead the colt near to or over hogs without his showing any fear. The result was, the man now became greatly interested.

At the next town, I mentioned the circumstance to the class, to encourage them, by showing how easy it was to do what they supposed to be very difficult, and really within the reach of any man who would try; when, to my surprise and that of all present, a man stepped forward from the back part of the crowd, saying that he was the man referred to, and that he would not take $50 for the knowledge obtained of me; that he was much interested, and that he had come eighteen miles to attend my lecture again.

Incidents of this kind were of almost daily occurrence. Persons with difficulty persuaded to join the class, would afterward say that they would not be deprived of the knowledge obtained for hundreds of dollars.

When at Derbyline, Vt., an enterprising little town on the boundary line of the northern part of the State, I had a large class. Among the incredulous who could not be induced to join the class, was a man who was recognized as one of the most successful horsemen in the neighborhood. During the time, a young man of fifteen, a member of my class, who had never handled horses, said to him that on the next day he would drive a certain six-year-old colt that had never been harnessed, and have him so gentle that the cross-piece could strike against the quarters without causing him to kick.

The old horseman regarded this as a boast, knowing the colt to be exceptionally bad, and unbroken, and said he would certainly regard it as a great feat to drive such a colt with the breeching, after six weeks' training. But to his surprise, the boy did drive the colt as stated. The man concluded that if an inexperienced boy, on joining the class, could learn to do so much in so short a time, he himself ought surely to be able to do as much; and if he could, such knowledge "would be worth a hundred dollars" to him (his own language afterward). A week later, he followed me to Barton, thirty miles, to join the class. On account of his prejudice, he could not be induced to do so in his own town, where it could have been done at a trifling expense.

I was constantly met with so much prejudice and opposition, that I was sometimes compelled not only to incur great risk, but to make unusual effort to inspire confidence in my treatment. The mere statement of the following facts will show the extent of this opposition: First, all the cases referred to were representative ones of an almost unlimited number that could be mentioned, which were broken solely for the purpose of proving this. Not only was I compelled to do all this work for nothing, but to assume the responsibility for any possible damages, and in many cases was obliged to pay, and liberally too, for the privilege of breaking the horses.

The "Press Horse" (Case 1, Fear), which before treatment was considered practically worthless, was not only broken without charge, but the owner was passed into the class free as an inducement to obtain the horse, with a guarantee that it should not be injured; and in addition the owner was promised the best suit of clothes he could buy in the city of Buffalo if the horse was not made gentle in twenty minutes.

Wild Pete (Case 8, Fear) was entirely worthless before I took him in hand. He was not only broken for nothing and made a safe family horse, but cost me in loss of time and expense nearly one hundred dollars. The Yates Horse (Case 8, Fear), the Watson Horse (Case 3, Kicking), were broken for nothing. The Chapman Horse (Case 9, Kicking) was not only broken for nothing, but at a loss of time and expense to me of fully fifty dollars. The McVay Horse (Case 7, Kicking) I not only broke for nothing, but pledged to forfeit $500 if I could not drive her gentle in forty minutes. The Hettrick Horse (Case 4, Kicking), which before treatment was positively worthless, and one of the most vicious horses I ever saw, was made a safe and valuable horse without a penny's compensation. The Malone Horse (Case 2, Kicking) I was compelled to buy at a large price to show that I could break him. For the Stevens Stallion (Case 10, Kicking) I gave a personal guarantee of $500 that he should not be injured, and in addition I promised to pay $25 if I did not make him gentle in fifteen minutes. .

The Allegan Horse (Case 10, Subjection) one of the most vicious horses known in the Northwest was broken for nothing. The Roberts Stallion (Case 11, Subjection), regarded so vicious as to be practically worthless, was broken at a great risk, and without pay. The Omnibus Horse (Case 3, Subjection) was not only broken for nothing, but in addition several men passed into the class free. The Brookville Horse (Case 2, Fear), though previously worthless, was made a safe and valuable horse for nothing, and the owner passed into the class free. The Wilkins Horse (Case 6, Subjection) was not only broken for nothing, but to obtain him to experiment upon I was compelled to pledge $1,000, as a guarantee against injury, and a forfeiture of an additional $100 if he could not be made gentle in forty minutes.

The noted horse Jet (Case No. 7, Subjection) was not only broken for nothing, but in the seriously impaired condition of my health at the time, was the cause of an amount of strain and injury to me that I would not have been induced to incur for many hundreds of dollars. I was not only compelled to go to Portland and remain there over a week at my own expense, but to admit nearly a hundred leading citizens without charge to witness the experiments as a reference which could not be questioned. In addition to making the experiments, there was also an element of danger not to be estimated. It was a common expression in Portland, that there was not money enough in any bank in the city to induce any man to go into Jet's stable and take him out of it. After the subjection of the horse it was unanimously voted that owners of horses could not afford to be without a knowledge of my system, even though at a cost to each of $25. I include here the names of a few of the leading citizens who were present:—

Dr. S. H. Tewksberry, Leading Surgeon, President Presumscott Park Association.

Dr. B. B. Foster, Congress st., Sec. Presumscott Park Association.

J. W. Robinson, Prop. of Livery and Hack Stables.

Dr. W. W. Green, High st., Leading Surgeon.

A. M. Sawyer, Esq., Agt. Society for the Prevention of Cruelty to Animals.

Chas. Sager, Prop. Livery and Hack Stables, Vice Pres. Presumscott Park Association.

Gen'l Tilton, Director State Agricultural Association.

Rev. Wm. H. Finn, Pastor High st. Congregational church.

Rev. A. P. Hillman, Chaplain to State Reform School, and owner of "Jet."

Dr. John Buzzell, Pleasant st.

Dr. Dana, Free st.

Dr. Small, Congress st.

Dr. French, Congress st.

Dr. S. P. Getchell, Congress st.

Dr. Bray, Brown st.

Wm. G. Davis, Esq., Proprietor Portland Packing Co.

G. F. HITCHINS, ESQ., R. R. Contractor.
E. WENTWORTH, ESQ., Supt. State Reform School.
GEO. MILLIKEN, Grocery and Provisions Dealer, and Prop. Glen House, N. H.
And 50 others.

I have many times been compelled to take such desperate chances in the subjection of especially dangerous horses, that it was like hazarding my life to the merest chances of success; yet it has been my good fortune, that in an experience of over twenty years I never had a bone broken, nor have I been seriously disabled, though I have had many narrow escapes. I have also been singularly fortunate in not killing or seriously injuring a horse, though frequently compelled to take great chances.

One of the great secrets of my success was that I never resorted to any jockeyism, and always told the exact truth as nearly as I could. I made it a special point to tell the people exactly what I could do, and if I failed to give the promised satisfaction in every particular, I would give to each man his money back.

In looking back I find one great element of my success to have been that I made it a rule, no matter how difficult, to always keep faith with the public by keeping my engagements. I have many times declined the offer of large classes because it would necessitate remaining over the appointed time and thus prevent my fulfilling an engagement elsewhere, even though there the prospects for success might seem extremely doubtful. During periods of obstruction in traveling I have often paid nearly as much for aid in opening roads and being carried through as I would make in filling the engagement. No storm, however severe, if it were possible to go through it, was ever sufficient to deter me from keeping an engagement. In addition, the interest many would evince in my efforts after joining my classes was frequently not only generous but flattering in

the extreme. In fact, the remembrance of this alone is sufficient to inspire a sense of encouragement and faith in human nature, that far outweighs whatever I have experienced that has been unpleasant. I am also largely indebted to the faithful co-operation of the assistants who were in my employ for many years. My general manager, Dr. Harlow Williams, who was with me over eight years, was always at his post, and by his prudence and faithfulness he rendered me invaluable service. Mr. E. B. Sims, my advance agent over seven years, proved himself one of the most industrious and faithful of men, making his service indispensable. Mr. Thomas Johnson, who was with me over ten years, much of the time acting as my assistant in teaching classes, acquired unusual skill in the subjection of horses, and rendered me good service.

My health had become so seriously impaired by the great strain to which I had been subjected for so many years, that in the winter of '78 I was compelled to give up my business. I now concluded to carry out, at my leisure, the purpose which had for some years been developing in my mind, that of writing up the full details of my system, including such knowledge as I believed most valuable to horse owners for reference.*

This work is not only the first of the kind published explaining the art of taming and educating horses, but it is the practical outgrowth of my experience. In its writing I have not only aimed to give the fullest explanation of my principles and methods of management with all the details carefully classified, but as an additional aid I have

*The difficulties of doing this can be better understood when I state that in the first place I am not a practical writer, and that owing to cerebral inflammation I have not been able to write a single page of this book with my own hand, nor read any part of it for revision or correction. It has been patiently dictated by me to a copyist, then read for revision, thereby making the work of its writing and arranging extremely laborious and difficult.

included the details of treatment of over forty of the most interesting and difficult cases subdued by me, giving age, color, cause of viciousness, etc., supplemented by a general review of principles under the head of Subjection. In this book will be found explained for the first time the secret of Rarey's success in the control of Cruiser and the other test cases in England and France, also of whom he obtained his knowledge of the treatment he used, which will be found of much interest.

It has been well known wherever I have traveled that I taught my system as a secret which I never gave in print; and on account of the great expense in traveling, requiring not only the aid of skilled men, but from five to ten horses, that to give me a reasonable compensation I was compelled to charge five, and in some sections of country ten dollars for such instructions, thus putting them within the reach of but a comparatively few. In addition, the time at my disposal for each class being so limited, it was impossible for me to give more than the merest outline of my system. The importance, then, of making this knowledge available to all at a moderate cost, can be seen. Certainly I could not give in many days' instruction the full details herein given. It will be especially valuable to my old scholars for reference. Take, for example, the explanation of the War Bridle; only a few, by the instructions given in the class, could remember even its simplest form of use. Here all the details of its various forms of application have been fully explained and illustrated. So in relation to methods of subjection and the principles of their application, with all the other details, including treatment for diseases, etc.

I may be permitted to add that I never could feel that I had any special fitness for winning even ordinary success in this field of effort. I simply drifted, as explained,

by circumstances into the current of its study, and the obstacles and difficulties it presented, compelled the effort to overcome them. One thing of which I first, last, and always tried to learn the secret was, to what degree there was power to change the character, or to make vicious horses gentle. This has been the central point of all my efforts. I can now see how easy it is to fail in the subjection of even ordinary cases for want of knowing how to adapt the treatment properly; and when there is failure, it will ninety-nine times out of every hundred be caused by the ignorance or unfitness of the trainer. On this account, when my health will permit, I intend to lecture occasionally to farmers and horsemen at convenient centers, making such experiments as may be advisable to enable a better understanding of the details here given. The better to carry out this purpose, I would ask the owners of especially valuable horses which are well known in their vicinity as vicious and dangerous, to write me particulars in relation to them, such as age, color, peculiarity of disposition, etc., and when convenient, I will give notice when I will experiment upon such.

CHAPTER XVII.

BREEDING.

One of the primary points of success in any enterprise is to start right, and in no respect is this more true than in the breeding of horses. The law of like producing like is inexorable; consequently to raise good horses, good horses must be bred from. Many farmers who are keenly alive to other interests, are singularly thoughtless and imprudent in this. If a mare is broken down, and unfit for labor, no matter how coarse or badly formed she is, or what the evidence of constitutional unsoundness, she is usually reserved to breed from.

On the same principle, no matter how coarse the stallion, if he is fat and sleek, and if his use can be obtained cheaply, he is selected for the same purpose. The most ignorant farmer is particular to select the largest and soundest potatoes, the best quality of oats, wheat, etc., for seed, because he has learned that this is true economy; yet there is the utmost disregard of this law of prudence in the breeding of horses and farm-stock in general. This sort of economy is like paying a quarter for a chicken and giving a dollar to get it carried home.

It costs just as much to raise a poor, coarse-blooded colt, as a fine-blooded one. The cost of feeding and care is really the same, the only difference being in that of the use of the horse. The first will possibly sell, when five years old and trained to harness, for from a hundred to a

hundred and fifty dollars. The other is worth from two hundred to a thousand, and possibly more. The first will scarcely sell for the cost of feeding and care. The second insures a large profit, and this for a little additional first cost. The fact is, breeding from poor, unsound horses is so much a detriment, that it would be a damage to any one to be compelled to breed from such stock, if given for the purpose.

In Russia, Prussia, and Austria, the breeding of horses is controlled by the governments, each one having large breeding establishments, where those wishing, can procure sound stallions, devoid of all hereditary diseases. Each stallion is furnished with a certificate from the government. No other stallions are allowed to serve mares, under a penalty. The result is, that you will scarcely find an unsound horse, except from accidents, etc. Hereditary diseases, such as ophthalmia, roaring, rupture, spavin, ring-bone, curby hock, spongy feet, etc., are scarcely known. It would be a source of undoubted economy and benefit to the breeders, if the legislature of each State would enact such laws, by appointing competent inspectors to grant licenses to those free from blemish or hereditary diseases or unsoundness.

A few years' breeding, under such restrictions, would materially increase the value of horses in each State, and thus be a real blessing to owners and the country.

In selecting a stallion, first look carefully at his head. The nostrils should be large and well defined; eyes full, bright, and clear, and good breadth between them; the ears lively, rather short and tapering, and the head high between the ears. Next see that the throat shows no enlargement of the glands, indicating a tendency toward a whistler or roarer. The shoulder should be oblique, strong and high, the fore leg not tied in under the knee, for such are liable to spring.

The feet should be of good size, and of sufficient depth to give strength to the quarters. Spongy and flat feet should be rejected. The loin should be strong, the back well coupled, quarters broad from point to point of hips, and running nearly straight out to the root of the tail. The stifle should stand low and well out; hocks strong and broad; no puffs or windgalls, as these indicate weakness.

As a colt from such a horse may at an early age show indications of blood spavin or thoroughpin, look at the inside of the hock for an enlargement at the point of what is called a jack spavin or curb. Next see that there is no enlargement at the edge of the hoof, known as ringbone. Weak eyes, blindness, poll-evil, fistula of withers, or in fact any cause of unsoundness should be sufficient cause for rejecting a stallion. I need not enlarge upon the fact that the mare should be selected with the same care.

The reader will be aided in the study of disposition bodily form, and the general characteristics of good and bad animals, by reference to the illustrations already given, and especially those in the following chapter. These will enable the mind to grasp these points better than it would be possible to do by the most extended verbal descriptions.

The following from a leading writer on selection is so much to the point that I cannot do better than to copy it:—

To be successful in breeding, special attention should be given to the particular variety of horse required. If heavy draught horses, or evenly trotting roadsters, or ponies, are required, both the sire and dam should be selected with special reference to these points. Desired effects can in a great measure be produced by proper crossings. If the mare is light-boned, or defective in this or in any other respect, select a horse that possesses the contrast of greater strength. But to insure certainty of obtaining what is wanted, the mare and horse should be as near the type of

what is desired as possible, though not related. Disposition should be an important consideration, as its inheritance will be as certain as that of physical qualities.

I give on page 87 a portrait of a remarkably fine Norman horse, imported by E. Dillon & Co., of Illinois, which is but one sample of a large variety of horses of this fine breed for draught purposes. I learn also that Stubblefield & Co., of the same city, are large importers of Norman horses. This breed of horses is remarkable for good disposition, and exemption from hereditary weaknesses. For a fine model of a thoroughbred, I would call attention to the portrait of the famous Godolphin Arabian, in chapter on Stallions.

Care of the Mare.

The mare is said to go with foal eleven months, or three hundred days; but it is not uncommon for mares to have fully developed foals in much less time, and in many instances mares have been known to go four or five weeks beyond this time. Time should be so arranged in putting mares, that the colts will come at a time when there is some grass, as the mare will do better not to be confined to dry feed.

The virgin mare, or one that has not had a colt for one season, must be put when she is found in season. The mare that has had a colt will be found in season, and should be put on the eighth or ninth day after foaling; some prefer the eighth, others the eleventh. Good judges claim that it is dangerous to go beyond the tenth, as the mare is apt to come off her heat soon after, and if allowed to go to a later period, the sucking of the colt is likely to reduce the mare too much to allow conception to take place, and thus a year's service of the breeder is lost.

After putting a mare, the days for trial are the ninth

after service, the seventh after this, the fifth after this again. Some commence again, commencing with the ninth day, and follow up as before, making forty-two days. Twenty-one days being the period elapsing between a mare's going out of heat, and coming in again, making her periodical term thirty days. Twenty-one days is claimed to be sufficient to prove a mare.

Reference is made elsewhere in this work to the importance of protecting the breeding mare from excitement, abuse, etc. Especial care should be exercised in this matter, as fright, exposure to bad weather, improper feeding, or any influence that would seriously disturb the normal condition of the nervous system, will have its certain effect upon the colt, often to the great loss of the owner.

The mare and colt should be well fed, and protected from storms. The theory of working a mare hard, and half starving the colt, is the poorest kind of economy, since the mare needs generous feed and rest, to renew her strength and make her milk, by which of course the colt is nourished and made to grow. When size and strength will indicate that it is time to wean, which is usually in five or six months, put the colt in a quiet pasture, away from the mare, where it should be closely looked after. A little oats (better if bruised) should be given daily.

The conclusion of careful breeders is, that it is much better for a colt to run in pasture, than to be confined in a stable. If the colt is intended for farm use, castration may be performed when six months old; if, however, the withers are light, it should be postponed until the head and neck fill up to the degree required, and this may require from one to two years, or even more. If the head is large and heavy, early castration is advisable. Colts should be generously fed, and protected from the inclemency of the

weather in winter. They should be treated gently. May be broken early to harness, if treated gently and with care. This, however, is hazardous, as there is danger of over-driving young colts if they are driven at all. Many seem to take pride in trials to which they subject two or three-year-old colts. It is not what they can do, but what they ought to be required to do.

CHAPTER XVIII.

STABLING.

The stable should be built on a dry, airy location, facing the south when possible. It should be warm, well ventilated and lighted, and so constructed as to prevent the exposure of the horse to sudden changes of temperature. The stall should be sufficiently large to allow the horse to turn around or lie down, with conveniences for feeding. The width should be not less than six feet, but when practicable, it would be better to allow each horse ten or twelve feet, to admit of a reasonable degree of exercise. This is not merely a great convenience to the horse, but it has considerable influence in preventing swelled legs, getting cast, etc. It is also important in that it permits a safer approach to a doubtful or vicious horse. It is the common custom to make the floor inclining backward, but this practice is unnatural, as shown by the fact that the horse, when left to choose his own position in a field, will almost invariably stand with his fore feet the lowest. See illustration.

The floor should be level; and to permit this, and at the same time keep it dry, it should be constructed as follows: Incline the floor backward about two inches, making it water-tight, with an opening or drain at the back end for the water to pass off. Arrange upon this an extra floor of slats, about an inch to an inch and a quarter thick, and five-eighths to three-fourths of an inch apart. The back

ends should be two inches thicker than the front, to compensate for the slope of the floor underneath, and thus give a level surface for the animal to stand upon, while the water can pass between the slats and drain off. This upper floor should be made in two parts, so as to open from the center upward, and stand upon edge while the lower floor is washed or cleansed as desired. This is the method of construction in one of the most perfect stables in the coun-

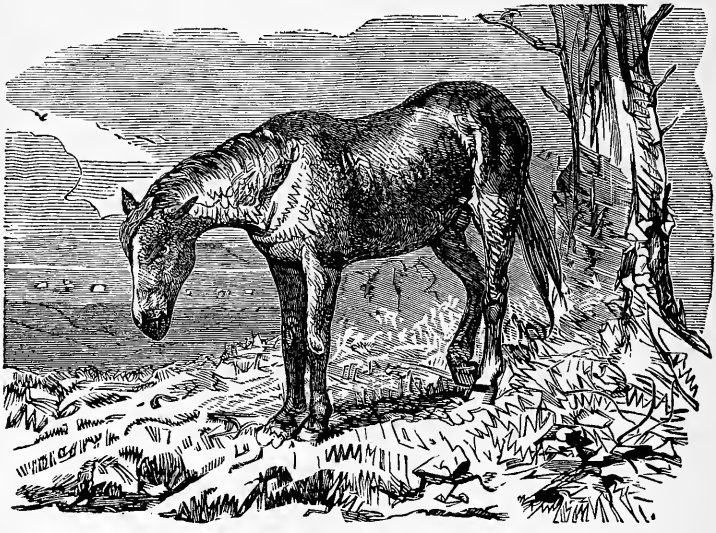

Fig. 303.—As a horse usually stands while resting in a field.

try, to an examination of which the author is indebted for the idea.

The door should be large, with an extra one of slats, which can be used during warm weather, exclusively for light and ventilation. It would also be well to have screens or mosquito netting over the door and windows, to protect the horse from flies,—a great annoyance to sensitive animals.

One of the most serious objections to stables as they are usually constructed throughout the country is the lack

of proper ventilation. Usually they are nothing but close boxes, and entirely too small for the number of horses kept in them. The doors and windows are closed, and the bedding, saturated with ammonia, is tucked away under the manger. If there is an upper flooring, it is made the receptacle for hay, so that it not only obstructs any possible ventilation through the stable, but by becoming impregnated with the poisoned air below, it is rendered unfit for food. Any one going into such a stable, especially during

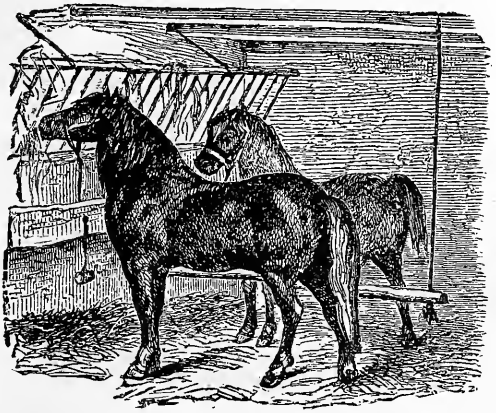

FIG. 304.—The accepted method in general use.

warm weather, will have the eyes immediately affected by the escape of ammonia, which, with the contamination of the air caused by being breathed over and over, makes it even sickening to breathe any length of time.

It is evident that to supply the wear and tear of bodily structure, the food must not only be good, but of sufficient quantity to supply nourishment to the body. Now a horse can live days, and even weeks, without food, while he cannot live five minutes without air.

It is needless to enter into details as to the quantity of air a horse breathes in any given time, as every intelligent reader has a good idea of this; but the fact that a horse

will quickly die when deprived of air is not so forcibly impressed upon the mind. Now it is evident that if the blood is not oxygenated by means of pure air passing to the lungs, the system will soon be poisoned; thus it is seen how necessary it is that there should be plenty of air in the stable, and as pure and free from contamination as possible. If it becomes impure in consequence of there being too many horses in the stable, and also loaded with ammonia from the bedding, it cannot properly purify the blood or carry away through the proper channels the

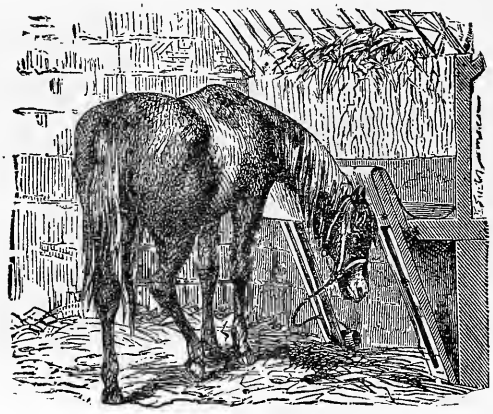

Fig. 305.— Objectionable method of tying.

broken-down, worn-out particles of matter, and thus permit a proper nutrition of the body. Instead of this, all the various conditions of disease are engendered. This is particularly noticeable as the source of ophthalmia, grease, glandular swellings, etc. Now if pure air were obtained only at a great expense, it might be a reasonable excuse for not furnishing it in necessary abundance; but the fact that it is obtainable in all cases with a very little trouble and care, renders this neglect little less than a crime, for which there should be no excuse or apology.

Now an abundance of ventilation in the stables may be

supplied in various ways, but the simplest and best is substantially as follows: A chimney or opening through the ceiling may be made in the form of a dome or cupola. The top should be roofed over and have lateral openings by means of weather-boards. The most convenient or comfortable stable the writer has ever seen had such a ventilator, which was so regulated that it could be partly or wholly closed, as desired. This was accomplished by means of two cords attached to opposite edges of a revolving door, and adjusted in the lower part of this opening or

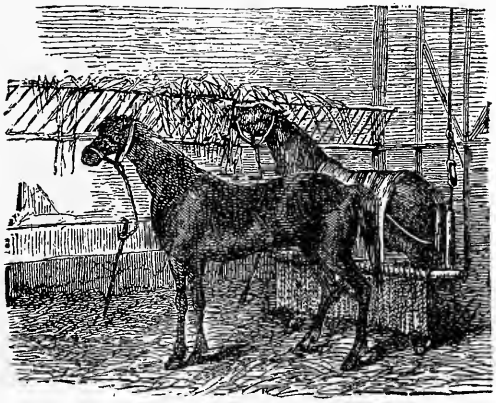

FIG. 306.—Rack too high.

chimney. Another special convenience was a contrivance for obtaining and measuring grain to be fed, which was so ingenious that I give a description of it: The grain was conducted from the loft to the feeding floor by a spout in which were two slides. Pulling out one of these slides a few inches permitted the escape of two quarts, and the other one of four quarts of grain, which was deposited in a drawer beneath. In the bottom of the drawer was a screw, with a handle projecting from the side of the spout. Moving this handle right and left a few times shook the bottom like a sieve, and thus removed all the dust and dirt, leaving the grain clean, fresh, and ready for use.

I have found two features about the stables as usually constructed through the country, which are so faulty that I would urge the necessity of having them corrected. First, in the construction of mangers and racks. The manger, an open trough, is usually so high that a horse of medium height can barely reach over and put his nose to the bottom. Extending over this manger is a rack so high that the horse can scarcely reach the hay from it. There is usually more hay packed into this than the horse can eat at one time, so it is suffered to remain there until it becomes stale and sour from the horse breathing upon it, and the exhalations from the bedding which is usually packed during the day under the manger. When the horse reaches for the hay, the dust and dirt which have accumulated are thrown over his head and eyes. In the first place, the horse does not like to eat such trash; secondly, it is difficult for him to reach it; thirdly, he is liable to be annoyed, if not injured, by the hay and dirt filtering into his eyes and mane.

The nearer the horse is made to feed in the stall as he does in the field, the better. But if compelled to eat grain from the ground, there would be waste. To avoid this, a receptacle must be provided in a corner about on a level with the shoulder, from which to eat grain; but the hay should be measured and put in a corner on the ground where it can be easily reached. If there is not too much given, the horse will eat it clean.

The importance of this is now so well understood that all first-class horses are fed in this way. For the ordinary work horse, or country stables, a simple low rack or manger, one side made into a box or receptacle for the grain, and the other part for hay, is all that is necessary. If two horses are kept together, the stall should be about twelve feet wide, with grain boxes at the right and left, and the

manger for hay in the center. Horses accustomed to working together will always agree when kept in the same stall, especially when they have separate mangers, and are prevented by their halters from interfering with each other's grain. The mangers and racks should be on a level, and about three feet and four inches from the ground. The manger should not be less than sixteen or eighteen inches deep; eighteen inches from front to back, and twenty or twenty-two inches in length. For one horse, the rack

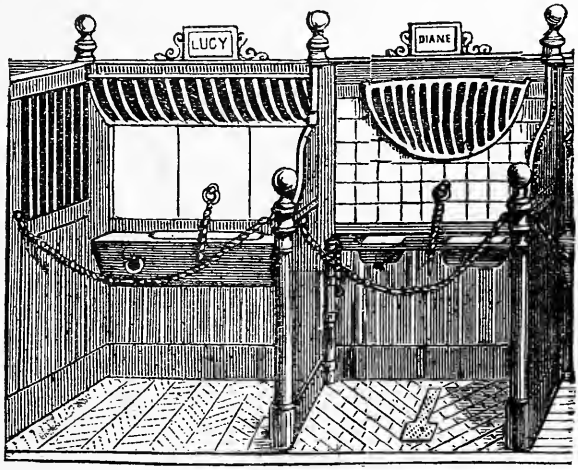

FIG. 307.—The accepted form of single stalls.

should be about four feet in length. The advantage of such a manger and rack is, that all the hay that is put into it will be eaten clean. There will be less danger than by the common high rack of putting more hay before the horse than he will eat at the time, and thus his mussing and spoiling it will be prevented. It will entirely obviate the objection of dust and seeds falling upon his head and into his eyes, or of pulling the hay out and wasting it under his feet.

Some horses are inclined to throw their hay out with

their noses. This can be effectually prevented by nailing two or three bars across the upper part of the crib from the back to the front. The hitching ring should be on the off or farther side, to prevent the strap from being caught by the foot. If the horse is a greedy eater, and disposed to throw the grain out of the box, it can be prevented by putting a few round cobbles in the bottom, thus compelling him to take his grain slowly. The division between the stalls should always be high enough to prevent the horses from interfering with each other. If windows are near, they should be so high as to prevent any current of air from striking directly.

CHAPTER XIX.

FEEDING AND WATERING.*

Hay, corn fodder, oats, and corn constitute the principal food of horses in this country. Hay and oats in the Northern States, fodder and corn in the South. The food should be of the quality and quantity to impart strength, vitality, and elasticity; and this requires some discrimination and care, as the food should be harmonized both to the condition of the horse and the severity of the labor to which he is subjected. As a rule, the stomach should not be distended with food when prolonged, energetic effort is required. This is to be especially guarded against in the feeding of hay. Greedy eaters can and often will eat so much hay as to unfit themselves for active labor, and it usually results in heaves, or broken wind. Heaves are always found in the teamsters' or carters' stables, where there is no care in feeding. This disease is never found among racing horses, from the fact that the utmost care is used in selecting the food, and feeding in small quantities, or in adapting it more perfectly to the wants of the system.

It has been demonstrated beyond doubt that the reason horses improve so much in wind by eating prairie hay is, that it is so coarse that they cannot eat it fast enough to overload the stomach. The quantity of hay should be carefully regulated, and never as much given as the horse

* The main points of this paper were dictated by Dr. Somerville, of Buffalo, N. Y., to the writer while studying with him.

will eat if at all voracious. The majority of owners pack a large rack full, either allowing liberty to eat too much, or making it unpalatable and unhealthful by being breathed upon. From eight to ten pounds is about the average quantity for an ordinary roadster to be allowed in twenty-four hours, more or less, according to size, the kind of work, and the quantity of grain given. Dusty or mouldy hay should never be fed, as it is liable to produce various forms of disease.

The food should be clean, and in quality perfect. Hay is most perfect when it is about a year old. Horses would perhaps prefer it earlier, but it is neither so wholesome nor so nutritious, and may cause purging. When it is a year old, it should retain much of its green color and agreeable smell.* The blades of corn pulled and cured in the summer are unquestionably much better than hay. I should certainly prefer this kind of fodder to any kind of hay, for fine horses. It is strange that it is not prized more highly in the North.

Oats make more muscle than corn. Corn makes fat and warmth. Hence, the colder the weather, the more corn may be given, and the harder the work, the more oats. Oats should be a year old, heavy, dry, and sweet. New oats will weigh from ten to fifteen per cent more than old ones; but the difference is principally water. New oats are said to be more difficult to digest, and when eaten in considerable quantity are apt to cause flatulency, or colic, and derangement of the stomach and bowels. The same may be said of corn. If not sound and dry, it may be regarded even much more dangerous than oats, and should not be fed. Doing so will be at the hazard of the consequences above mentioned.

*In packing or stacking hay, salt should be slightly sprinkled through it so as to destroy insects. It also aids in preserving it bright, and makes it more palatable and healthy for the horse.

The quantity of oats given daily may vary from eight to sixteen quarts. If the horse is large, and the work is severe, a little more may be given. Corn should be fed in the ear, and like oats must be regulated in quantity to the size and labor of the animal, from five to twelve good sized ears are a feed. I give a larger proportion of feed at night, and less in the morning and noon. There is ample time for digestion during the night. There is not during the day, if the labor is severe. Experience proves that some mildly cooling laxative food should be occasionally given. A bran mash, made by pouring boiling water on eight or ten quarts of wheat bran, covered over until cool and fed at night, from one to three times a week, is the finest and best.

Carrots are a good laxative and alterative before frost, but are too cold and constipating during cold weather. They may be fed in October, November, and December, but in the Northern States not later.

I feed Irish potatoes, from one to three quarts, with the usual quantity of grain, from two to three or four times a week, and would recommend their use. Feeding a small quantity of roots and giving bran mashes, keeps the bowels open and the system in a healthy condition. Without them constipation is probable, and this is one of the primary causes of diarrhœa, colic, or inflammation of the bowels. If it is desired to make a horse fat in a short time, feed corn meal and shorts, with cut straw, to which add a pint of cheap molasses. Nothing like this for recruiting and filling up a horse that is out of sorts or poor.

If the horse is exhausted, or when sufficient time cannot be allowed for him to eat and partially digest a full meal, he may be greatly refreshed by a draught of warm gruel, or, in summer, of cold water containing a small quantity of meal.

Cooking the Food.

My attention was some time ago called to the advantage of cooking food for horses. Those who have given the most careful study to the principles and best methods of alimentation, state, first, that well-crushed grain is not only more readily masticated, but more easily digested; second, that cooking the food enables the animal to assimilate a far larger percentage of the nutrition than from the same amount of grain fed in its raw state. The amount of gain is claimed to be from 20 to 30 per cent. According to report, the Germans have long used cooked feed for their army horses, and found it to excel all other kinds of food in giving greater strength to the horse, and increasing his power of endurance. It is also claimed by the most successful stock-breeders in England and on the Continent, that horses and cattle thrive better, and are far healthier, when fed on cooked food than when fed on any kind of raw food.

I copy from a circular published by the Chicago Steam Cooking Feed Company, some of the advantages of cooked food for horses :—

1st. Many horses are so voracious and eat so rapidly, that they do not properly masticate their food, and, in other cases, the grain is too hard to be properly masticated.

2d. It is estimated that more than one-half of the diseases which afflict horses, are induced by the use of uncooked food, and its bad effects upon the digestive apparatus.

3d. The hard, flinty covering of raw grain can neither be properly ground by the teeth, nor is it soluble in the stomach, and most of it passes from the stomach undigested.

4th. All energy expended in attempts to assimilate certain parts of raw food, is just so much waste and positive loss.

Among the advantages of using properly cooked food for domestic animals, are the following :—

1st. Cooked and ground feed is much more palatable for the animal, and is very easily masticated.

2d. The hard, dry covering of grain, when it has been steamed and ground, becomes as nutritious as any part of the grain, and adds just so much to its food properties.

3d. The entire grain is digested, and no portion of it wasted; nor is there any loss in efforts of the stomach to do the work of the cook and the grist-mill.

4th. The loss in feeding raw grain is changed to gain in the cooked feed, a smaller quantity of the cooked grain giving a larger proportion of animal strength.

5th. The primary cause of much illness and derangement of digestion in animals is removed by the use of properly cooked feed.

It seems to the writer that cooked food is especially important to horses having weak digestion, and for old, enfeebled horses.

When a horse is off his feed, by over-eating or want of proper exercise, the better way is to reduce his usual quantity of grain one-half for three or four days or a week, when he will eat again as well as ever.

I here give Mr. Bonner's system of feeding:—

"In the morning at five o'clock in summer, and six o'clock in winter, each horse is given two quarts of oats. At nine o'clock two quarts more are given, and the same quantity is given again at one o'clock. Before feeding, each horse is given all the water he will take, unless he is to be driven, in which case the allowance is cut short a little. At five o'clock in the afternoon the allowance of hay is given, usually about ten pounds to each horse; and none is given at any other time during the twenty-four hours. At nine in the evening each horse is given a warm supper, prepared as follows: For the ten horses, twenty quarts of oats are put into a large kettle and boiled, after which is added about the same quantity of wheat bran by measurement, with the proportion of a teaspoonful of salt to each horse. The whole is thoroughly mixed, and, when sufficiently cool, each is given his share. If not driven, each horse is walked from half an hour to an hour daily, and the greatest care is taken not to expose them needlessly for a moment without blankets."

The following is the routine pursued with Dexter:—

At six every morning, Dexter has all the water he wants, and two quarts of oats. After eating, he is

"walked" for half an hour or more, then cleaned off, and at nine has two quarts more of oats. If no drive is on the card for afternoon, he is given a half to three-quarters of an hour of gentle exercise. At one o'clock he has oats again, as before, limited to two quarts.

From three to four, he is driven twelve to fifteen miles; after which he is cleaned off and rubbed thoroughly dry.

He has a bare swallow of water on returning from the drive, but is allowed free access to his only feed of hay, of which he consumes from five to six pounds.

If the drive has been a particularly sharp one, he is treated, as soon as he gets in, to a quart or two of oat-meal gruel; and when thoroughly cooled, has half a pail of water and three quarts of oats, with two quarts of bran moistened with hot water.

Before any specially hard day's work or trial of his speed, his allowance of water is still more reduced.

It is a very bad practice, and one that should never on any condition be permitted, for grooms or teamsters to give any kind of medicine, either for tonic or diuretic purposes. Many a fine horse is completely ruined by ignorant grooms and owners, who think they can help nature by giving nitre and other strong medicines, that are never admissible except in certain emergencies, and then should be given only very cautiously.

I am satisfied that many veterinary practitioners give not only too much but too strong medicine, which, though of apparent advantage for the present, must ultimately result in serious harm to the health of the horse. Clean, good food, properly prepared, and given in quantities according to the needs of the animal, is safer and better than to be giving medicine for every little change of condition.

If the horse is out of sorts, over-fed in proportion to his work, becomes dainty, or the depurative processes are obstructed by the feeding of too much or of two highly concentrated food, let up on the grain, and feed more bran mashes or green food.

Old horses that are not feeding well, or are running down without apparent cause, should have the teeth carefully examined (see article on The Teeth), as sometimes the horse cannot grind his feed. The simplest way of making an examination, is to catch the tongue, and, with the hand closed, let its under part rest upon the lower jaw, with the end of the thumb forced upward against the roof of the mouth. (See illustration of giving ball.) This will compel the horse to keep his mouth open, so as to enable looking into it or passing the hand far enough back to examine the teeth. If they are found to be the cause of the trouble, they should be filed down, as directed under that head.

Watering.

If a large quantity of cold water is taken into the stomach while the system is agitated, by the circulation being so increased as to open the pores of the skin freely, it is liable to chill the stomach and close the pores of the skin, and thus excite some one of the common alimentary derangements, as colic or inflammation of the bowels, etc. Hard water, especially cold well water, is more liable to cause mischief in this way than soft water. Hard water will affect some horses so much as to almost immediately cause the hair to look rough or staring, and derange the appetite. Horses that are raised and worked in a country where the water is strongly impregnated with lime, are troubled with intestinal calculi; *i. e.*, stone in the bladder. Hence soft water should be given, if convenient; but if

well water be given, especially during warm weather, it should either have the chill taken off or be given very sparingly.

The best time to water a horse is about half an hour before feeding. While driving, the rule should be, little and often. None, or only a swallow or two, should be given at the close of a drive, until cool. If very warm, the horse should be walked moderately where there is not a current of air to strike him, from ten to thirty minutes. If any danger is then apprehended, the chill should be taken off the water if very cold, and given sparingly, or only a few swallows at a time. The common custom is to give about a half bucketful. The safer course would be to give less and repeat.

The rule for ordinary use should be, to give a small quantity often during the day, and let the animal pursue his journey or labor immediately after. If allowed to stand, the system is liable to be chilled, and the absorbents closed, which is the common cause of laminitis or founder, although this disease may not develop itself until twelve or twenty-four hours afterward. Any cause which will chill the horse—either cold winds or cold water—will be almost sure to produce this disease.

CHAPTER XX.

HOW TO TELL THE AGE.

It is sometimes very important to be able to determine the age of a horse; and as this is indicated most surely by the teeth, I have had made, under my special supervision, a large proportion of the illustrations here given, which will be found the fullest and most complete published in this country. I encountered very serious difficulties in obtaining these illustrations, as I found it next to impossible to give the artist an idea of the changes occurring in the teeth and form of the jaw with age, but they are as accurate as I could secure. I have tried also to make the description so simple as to enable any ordinary person to determine the age of horses with considerable accuracy, or so nearly as to prevent being seriously imposed upon. In doing this, I have not hesitated to appropriate the language of others when adapted to my purpose.

Fig. 308.—One week old.

At first the jaw is small, and to accommodate the position, temporary, or what is termed milk-teeth, are grown; these are succeeded by permanent teeth, as the jaws become larger and stronger. As the front teeth or nippers only are usually studied to note the changes which determine the age of a horse up to eight years, I will try to give such an explanation of them as will serve to aid the general reader in catching the points of these changes most clearly.

Fig. 309.—Six weeks.

When the colt is one week old, the two central nippers are grown about as here represented. In from

five to six weeks, another incisor will appear on either side of the two first, and the mouth will appear something like cut 308.

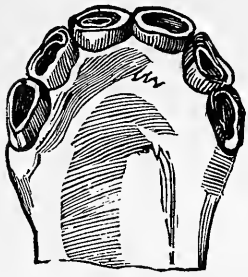

Fig. 310.—One year old.

At two months they will have reached their natural level, and between the second and third months, the second pair will have overtaken them. They will then begin to wear away a little, and the outer edge, which was at first somewhat raised and sharp, is brought to a level with the inner one, and so the mouth continues until some time between the sixth and ninth months, when another nipper begins to appear on each side of the two first, making six above and below, and completing the colt's mouth; after which, the only observable difference, until between the second and third years, is in the wear of these teeth.

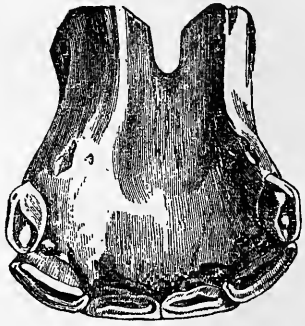

Fig. 311.—Twenty months.

These teeth are covered with a polished, hard substance, called enamel. It spreads over that portion of the teeth which appears above the gum; and not only so, but as they are to be so much employed in nipping the grass, and gathering up the animal's food, (and in such employment even this hard substance must be gradually worn away,) a portion of it, as it passes over the upper surface of the teeth, is bent inward, and sunk into the body of the teeth, and forms a little pit in them. The inside and bottom of this pit being blackened by the food, constitutes the *mark* of the teeth, by the gradual disappearance of which, in consequence of the wearing down of the edges, we are enabled, for several years, to determine the age of the horse.

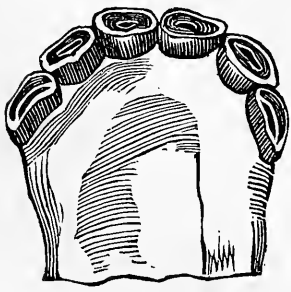

Fig. 312.—Two years.

The colt's nipping teeth are rounded in front, somewhat hollow

toward the mouth, and present at first a cutting surface, with the outer edge rising in a slanting direction above the inner edge. This, however, soon begins to wear down, until both surfaces are level, and the *mark*, which was originally long and narrow, becomes shorter, and wider, and fainter. At six months the four nippers are beginning to wear to a level. Cut 310 will convey a good idea of the appearance of the teeth at twelve months. The four middle teeth are almost level, and the corner ones becoming so.

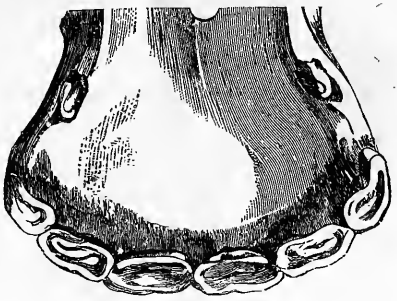

FIG. 313.—From 2½ to 3 years.

The mark in the two middle teeth is wide and faint; in the two next teeth it is darker, and longer, and narrower; and in the corner teeth it is darkest, and longest, and narrowest. At the age of one year and a half, the mark in the central nippers will be much shorter and fainter; that in the other two pairs will have undergone considerable change, and all the nippers will be flat. At two years this will be more plainly marked. Cut 312 is intended to show the appearance of the mouth at this stage.

FIG. 314.—About 3½ years.

Cut 313 is intended to show the appearance of the mouth at two and a half to three years old. The next is intended to show it at three and a half years old. The two central permanent teeth are growing down, and are larger than the others, with two grooves in the outer convex surface, and the mark is long, narrow, deep, and black. Not having yet attained their full growth, they are lower than the others. The mark in the two next nippers is nearly worn out, and is wearing away in the corner nippers.

Between three and a half and four years the central nippers

have attained to nearly their full growth, and the second pair will have so far displaced the temporary teeth as to appear through

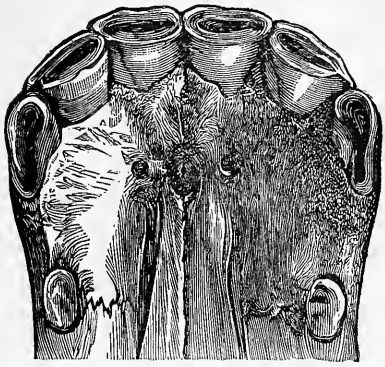

FIG. 315.—At 4 to 4½ years.

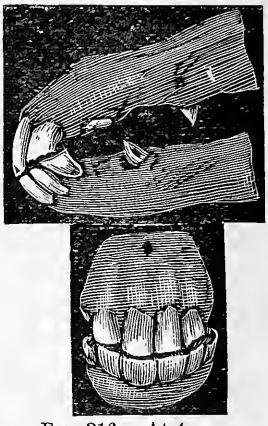

FIG. 316.—At 4 years.

the gums, while the corner ones will be diminished in breadth, worn down, and the mark become small and faint.

At four years the central nippers will be fully developed; the sharp edge somewhat worn off, and the mark shorter, wider, and fainter. The next pair will be up, but they will be small, with the mark deep, and extending quite across them.

FIG. 317.—About 4 years.

At four years and a half, or between that and five, the corner nippers are shed, and the permanent ones begin to appear, something like cut 315. The central nippers are considerably worn, and the next pair are commencing to show the marks of usage. The tush has now protruded, and is fully a half inch in height; externally it has a rounded prominence with a groove or hollow in the inside.

At five years the horse's mouth is almost perfect. The corner nippers are quite up, with a long, deep, irregular mark on the inside, and the other nippers are showing the effects of increased wear. The tush is much grown, the grooves on the inside are almost or quite disappeared, and the outer surface is regularly con-

vex. It is still as concave within, and the edge nearly as sharp as it was six months before.

At six years the mark on the central nippers is worn out. In the next pair the mark is shorter, broader, and fainter; and in the corner teeth, the edges of the enamel are more regular, and the surface is evidently worn. The tush has attained its full growth, being nearly or quite an inch in length; convex outward, concave within; tending to a point, and the extremity somewhat curved. The horse may now be said to have a perfect mouth, as all the teeth are produced and fully grown.

FIG. 318.—At 5 years.

At seven years, the mark, in the way in which we have described it, is worn out in the central nippers, and fast wearing away in the corner teeth; the tush also is beginning to be altered. It is rounded at the point; rounded at the edges; still round without; and beginning to get round inside.

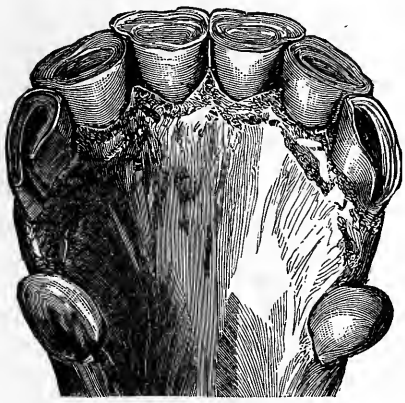

FIG. 319.—At 6 years.

At eight years the tush is rounder in every way; the mark is gone from all the bottom nippers, and it may almost be said to be out of the mouth. There is nothing remaining in the bottom nippers that can afterward clearly show the age of the horse. The upper nippers will give some indications, but nothing certain.

After the age of eight years, there are no points that will enable determining age with any degree of accuracy. A horse that

is fed on corn will show an older mouth than one that is fed on oats and sloppy feed.

The usual time for determining a horse's age is in May; but a colt may come any time between then and fall, so that the wearing away of the teeth or disappearing of the marks or cups may in some cases indicate the horse to be older or younger than he really is. These conditions must be taken into consideration.

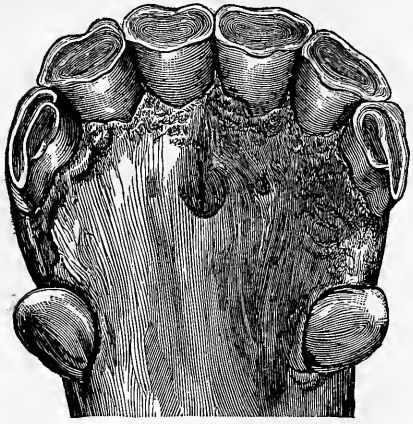

FIG. 320.—About 7 years.

At six years the teeth are rather short, flat, or wide, and the gums run across them horizontally, something like cut 324. After the eighth year the gums begin to recede from the center, and the teeth become longer in appearance. By looking at cut 325, showing twelve years, we can see that the gum is receded and run to a sharp point at the center of the teeth. At twenty years, the teeth are considerably narrower and longer, and the gums are drawn back sharper.

By observing the face of the teeth, there will gradually be seen a change to the triangular form, which can be best seen and described by cuts 330, 331. From the age of fourteen, we see this is more noticeable, the middle nippers gradually increasing and extending out to the corner ones, as indicated by cut 331. From fifteen to eighteen this triangular form becomes laterally contracted, so that at about twenty and afterward, the teeth become biangular. As before explained, there are great peculiarities in the form of the teeth with advanced age. The most common is shown by cut 332. I include a somewhat rare form shown by extreme age. See cut 333.

Many curious tricks and methods of telling the horse's age after eight years old have been shown the writer at various times, such as wrinkles about the eyes, and root of the tail, etc., none of

which give the idea so correctly as the general appearance of the teeth and absorption of the jaws. In young horses the edge of the lower jaw is round and full ; as the horse becomes older, this edge becomes sharper and thinner.

The most unique trick shown the writer of telling the age was the following :—

If a gold ring be attached to a hair pulled from the tail or mane of a horse, and suspended directly above his head between the ears, it will oscillate, like a pendulum, just the number of times the horse is years old, then stop and repeat. I have repeatedly made the experiment, and it certainly seemed to repeat the age of the horse; but I could not feel satisfied that the motion of the ring was not in a great measure controlled by the involuntary movement of the hand. The man who gave the idea made the experiment in the presence of the writer with apparent success.

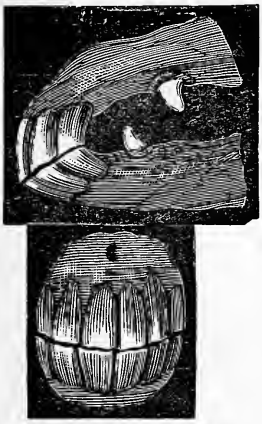

FIG. 322.—At 8 years.

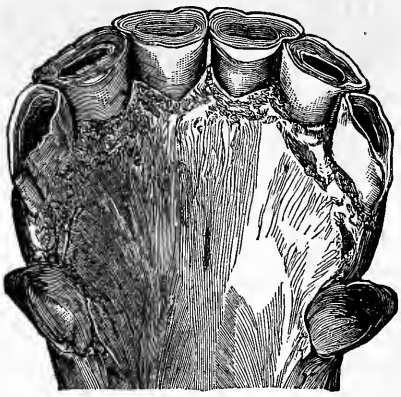

FIG. 321.—About 8 years.

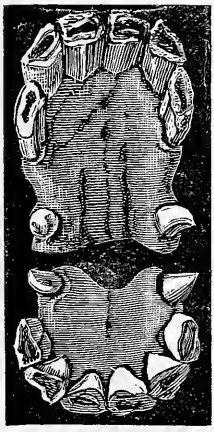

FIG. 323.—At 8 years.

Jockeys frequently resort to cutting down the teeth of aged horses, so as to simulate as much as possible the appearance of the mouth at eight or nine years of age. This was formerly done by sawing or filing, but more recently there has been invented, by Dr. Dancer, a leading veterinary surgeon of New Jersey, a very in-

genious instrument for chipping off the teeth, so that the front nippers can be cut down very quickly and easily by any amateur.

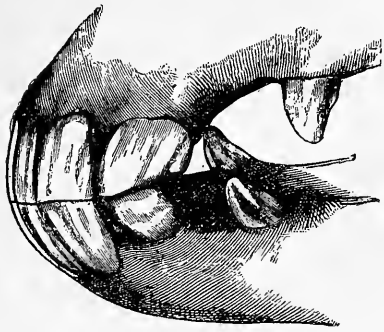

FIG. 324.—About 6 years old.

But the breadth of the teeth and other changes of form, as explained, will expose the deception; also the deep hollow and gray hairs about the eyes, with the under lip considerably pendant. This treatment is called "bishoping," from the name of the man who introduced it in England, and is practiced very largely by jockeys in the larger cities of this country, especially in New York.

I wish to call attention to the fact that horses, especially those advanced in years, are liable to have the teeth in wearing overlap one another, become very rough and wound the inside of the cheeks, or the grinders become irregular in length when they do not come opposite each other in shutting, or the teeth become carious and break away when not correspondingly worn with the other, shoots up to a degree to penetrate the jaw, causing soreness and inflammation, and seriously interfering with eating.

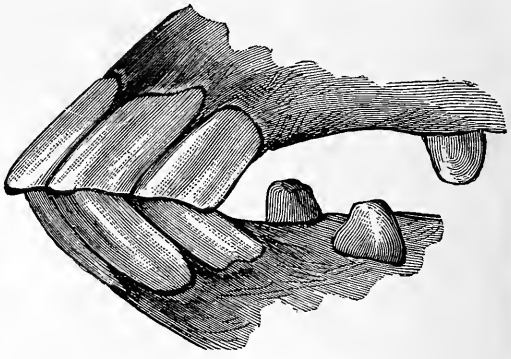

FIG. 325.—About 12 years old.

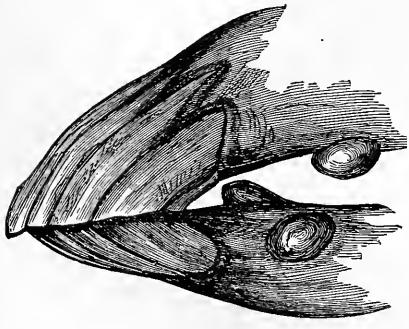

FIG. 326.—About 20 years old.

The writer saw a very interesting case of this kind at the Columbia Veterinary College, in which the unobstructed tooth had seriously penetrated into the upper jaw. In the endeavor to

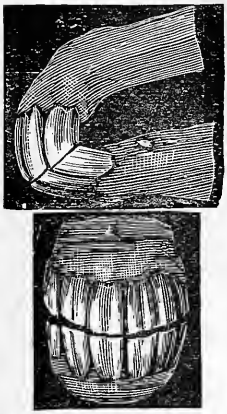

FIG. 328.—Mouth of the mare at 13 years.

FIG. 329. — Mouth of the mare at 13 years.

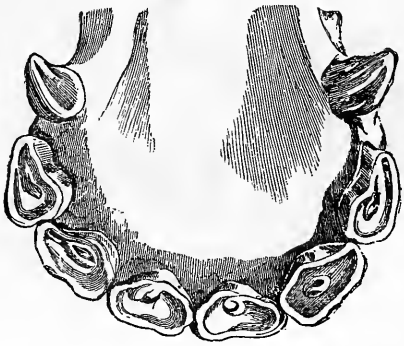

FIG. 327.—About 11 years of age.

relieve the pressure of the parts, the animal evidently masticated the food wholly upon the opposite side of the mouth; in consequence of this the teeth on this side were so worn down that both upper and lower jaw were twisted around more than an inch out of line.

Sometimes caries or ulceration of a tooth produces such serious disturbance that there may be an enlargement of the parts, growth of fungus, or necrosis of the parts. This too is much more common than is suspected. Prof. Cressy of Hartford called my attention to a case in which a back tooth in the lower jaw became ulcerated, causing much enlargement of the jaw. He first removed the tooth, then divided the skin at the lower edge of the jaw, and with a drill made a hole through the bone. Through this hole he put a seton to keep the parts open until a healthy healing process should be produced. A strong preparation of carbolic acid was put upon the seton and dressed once a day, which finally effected a perfect cure.

When the horse, without any apparent cause, is running down, munching or eating his food but slowly, especially if there is any lateral action of the jaw, examine the mouth carefully to see whether there is any noticeable cause of trouble in the teeth. If rough and irregular, they should be rasped down. The method of doing this is now so well understood as to scarcely need explanation.

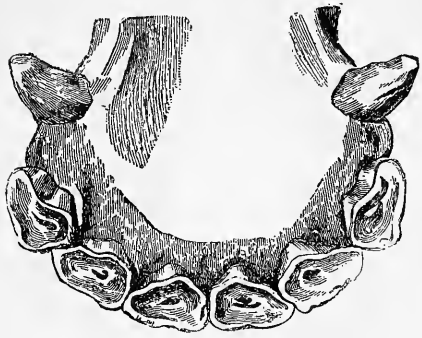

FIG. 330.—At 14 years old.

The rasping down of all irregularities should be carefully done, and if there is a decayed tooth it should be removed by a veterinary surgeon who is conversant with the simplest and best method of doing it. There are now regular horse dentestry implements in general use for this purpose, which can be easily obtained. If the tooth has grown down beyond the level of the others, it should be rasped or sawed off to the proper dimensions, and carefully watched afterward so as to remove any undue growth harmful to the opposing parts.

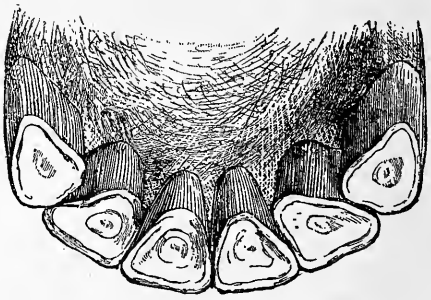

FIG. 331.—At 16 years old.

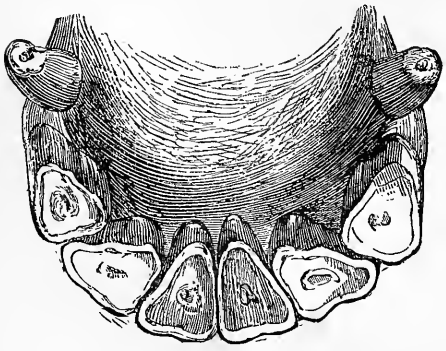

FIG. 332.—From 17 to 18 years old.

If there is any enlargement of either jaw, more especially of the upper one, with perhaps a running sore offensive to the smell; and if in addition

there is offensive matter running from the nostril on that side, the trouble may be suspected as arising from a carious tooth, and the jaw on that side must be carefully examined.

It may be asked, "How is it, if the trouble arises from a carious tooth, that the matter comes from the nostrils?"

Answer: By the imprisoned matter forming a sinus into the nasal cavity.

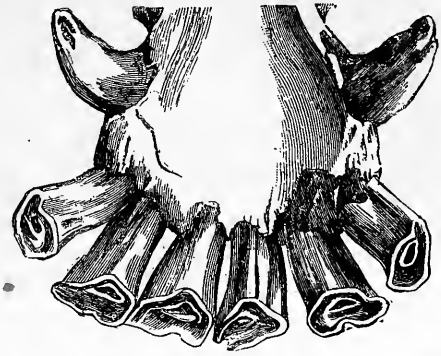

FIG. 333.—Extreme age.

The treatment for all such cases is, first, in the removing of the offending cause, namely, the tooth itself, and also, as far as possible, the dead or diseased parts, and favoring a healthy condition of growth by cleaning out the parts with a strong solution of carbolic acid, or chloride of lime, or any good disenfectant. Next, protect the parts from the lodgement of particles of food, by filling with a pledget of tow saturated with the tincture of myrrh, or any good healing astringent, and dress once a day. If there is diseased bone, or fungus growth, it should be treated the same as for other difficulties of the same kind.*

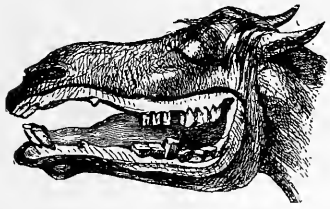

FIG. 334.—Irregular growth of teeth.

*Since writing the above, my attention has been called to an article in the *Journal of Comparative Medicine and Surgery* of April, 1883, by Dr. Robert Jennings of Detroit, Michigan, in which he refers to a large number of cases of this description.

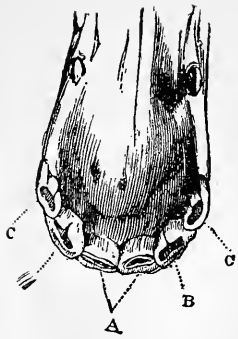

FIG. 335.—The lower incisors are chiefly depended upon to indicate the age. From their position they have received particular names. The two middle are termed pincers, A; those near them on either side, the middles, B B; those which complete the half circle, the corners, C C.

FIG. 336.—Front and back view of an incisor.

FIG. 337.—A longitudinal view of an incisor.

FIG. 338.—Lateral section of an incisor; *a*, external enamel; *b*, central enamel: *e*, dental star formed by newly-formed ivory which has filled the cavity of the absorbed pulp; *d*, primitive ivory.

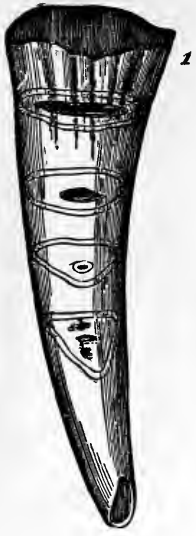

FIG. 339.

The shape of the incisor varies considerably when examined in the direction of its length. At its free extremity it is flattened before and behind; further down it becomes oval, then round, then triangular, and at last flattened at the sides, so that if the length of an incisor be divided into a series of cross-sections, a diagram will be obtained, showing the change of form with advanced age.

This will be indicated more particularly by referring to other cuts.

FIG. 340.—Canines, or Tushes (the mare has them only in a rudimentary form); A, external face; B, internal face.

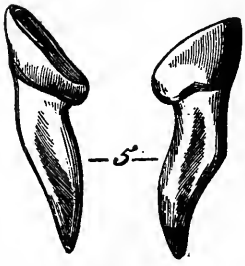

FIG. 341.—Temporary, or Milk Teeth.

FIG. 342.—A noted vicious horse.

FIG. 345.—A model head.

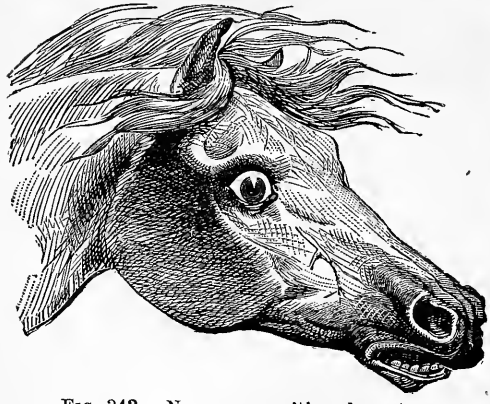

FIG. 343.—Nervous, sensitive character.

FIG. 344—Wild, untamable nature.

FIG. 346.—A vicious character.

FIG. 347.—A good head.

FIG. 348. Heads showing no vitality, or action. FIG. 349.

Fig. 350.

Fig. 351.

Fig. 352.

Fig. 353.

Fig. 354.

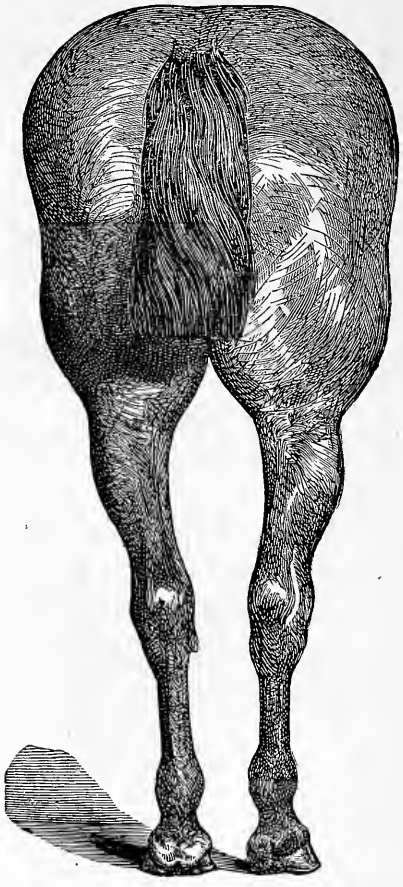

Fig. 355.

FIG. 356.

FIG. 357.

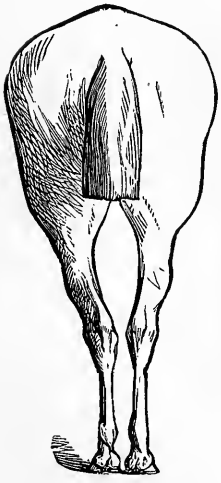

FIG. 358.

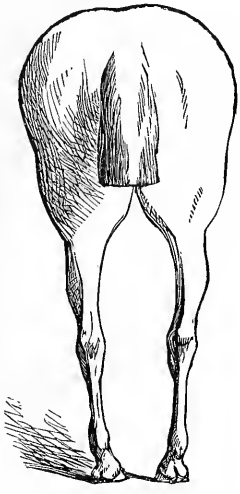

FIG. 359.

Fig. 360.

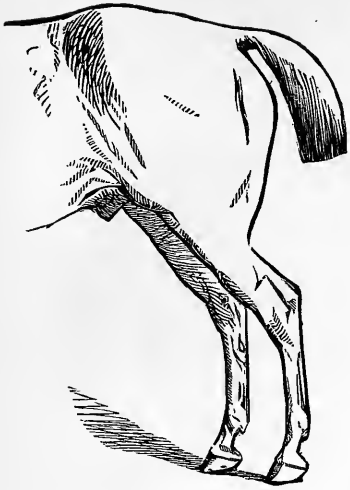

FIG. 361.

FIG. 362.

FIG. 363.

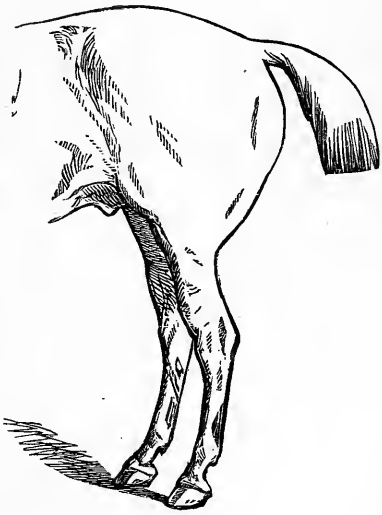

FIG. 364.

CHAPTER XXI.

SHOEING.*

THE foot of the horse is composed of two series of parts ; the one internal, organized and sensitive ; the other external, formed of a horny, organic matter, but possessing no vital property or sensibility.

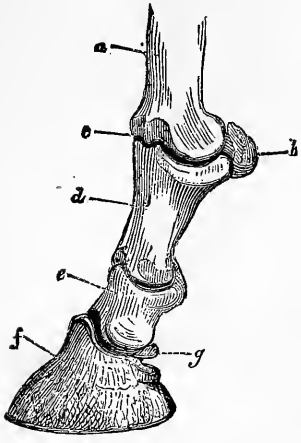

FIG. 365.—Bones of the foot.

a. Cannon or Shank; *b.* Sesamoids; *c.* Fetlock joint; *d.* Upper pastern; *e.* Lower pastern; *f.* Coffin bone; *g.* Navicular bone.

A. The internal parts are :—

1. Bones to the number of three; the *third phalanx,* the lowest portion of the framework of the member, which is continued on its sides and rear by elastic prolongations forming the base of the heel, the *lateral fibro-cartilage* (which gives a longitudinal section of the foot) ; the *second phalanx,* immediately above the third, with which it articulates; and the *navicular,* shaped like a weaver's shuttle, situated behind the third phalanx, of which it forms the complement. These three bones together form the articulation of the foot. See Figs. 365, 366.

2. Special ligaments which connect these bones to each other, placed chiefly on the sides of the bones.

3. Tendons, which serve the threefold use of agents for the transmission of motion, of a means of fastening the bones, and of organs for suspending the weight of the body. These tendons are three in number : an extensor in front and two flexors behind ; first, the perforator; second, the perforated. See Figs. 369, 370.

* From Outline of Structure of the Foot. By M. BOULEY.

4. An elastic fibro-cartilaginous process ; the plantar cushion attached to the third phalanx, which it complements behind, and enlarges the surface by which it takes its bearing on the sole, and transmits to the ground the pressure which it supports. It is the means of deadening shocks and reactions.

5. Arteries, veins, and lymphatics, vessels which contribute to the nourishment of the foot, and are remarkable by their number and their flexuous and anastomotic disposition. See Figs. 371, 372, and others farther on.

6. The nerves, the organs of sensibility in the foot, also remarkable for their number.

7. An integumental membrane peculiar to the region of the foot, and differing from the general integument, or skin, of which it is a continuation, by its external appearance, its modified structure, and its special functions ; thus it is this membrane which secretes the horny case or hoof, but assumes a particular appearance according as it is required to secrete the anterior and lateral face or *wall*, or the lower face or *sole*. At the height of the second phalanx it forms a thick circular pad which, released from the horn which hides it, displays the form of a rosy membrane covered with an infinite number of little short filaments, thick as those of velvet. These form the matrix of the horn, and are true hair-roots, for the horn is nothing but a great quantity of threads or hairs attached one to

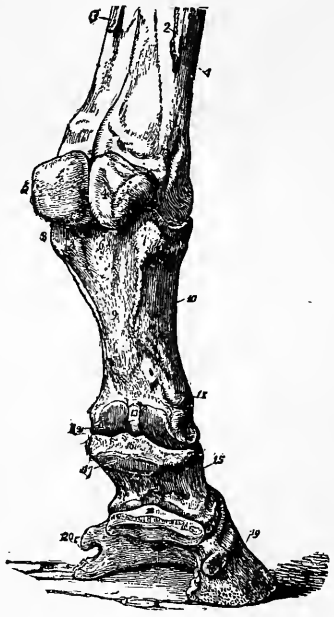

FIG. 366.—Posterior view of front digital region.

1. Large metacarpal bone; 2, 3. Outer and inner splint bones; 4, 5. Sesamoid bones; 6. Suffraginis; 7, 8. Tuberosities for insertion of crucial ligaments; 9. Triangular space for insertion of short sesamoid ligament; 10. Anterior face of suffraginis; 11, 12. Tuberosities for ligamentary insertion; 13. Articular depression separating condyles; 14, 15. Second phalanx; 16. Scabrous surface for ligamentous attachment; 17. Smooth surface for gliding of deep flexor tendon; 18. Navicular bone; 19. Pedal bone; 20. Basilar process; 21. Plantar foramen.

FIG. 367.—Right fore foot of a horse.

1. Radius; 2. Groove for the anterior extensor of the phalanges; 3. Scaphöides; 4. Lunare; 5. Cuneiform; 6. Trapezium; 7. Magnum; 8. Unciform; 9. Metacarpal; 11. Sesamoid bone; 12. Suffraginis; 13. Coronary; 14. Navicular; 15. Pedal; 16. Its ala.

FIG. 368.—Deep muscles on external aspect of right anterior limb.

9. Anterior or great extensor of the metacarpus; 10. Ulna; 11. Extensor pedis; 12. Ulnaries accessories, or Ulna portion of the perforans; 13. Lateral extensor of the metacarpus, or extensor suffraginis; 14. Oblique extensor of the metacarpus; 15. Flexors of the foot; 16. Trapezium; 17. Annular ligament; 18. Carpal ligament of perforans tendon, 20; 19. perforatus; 21. Tendon of anterior extensor of metacarpus; 22. Small metacarpal bone; 23. Suspensory ligament; 24. Lateral band of metacarpo-phalangeal sheath; 25. Perforans tendon; 26. Branch of the suspensory ligament joining the extensor pedis, 27.

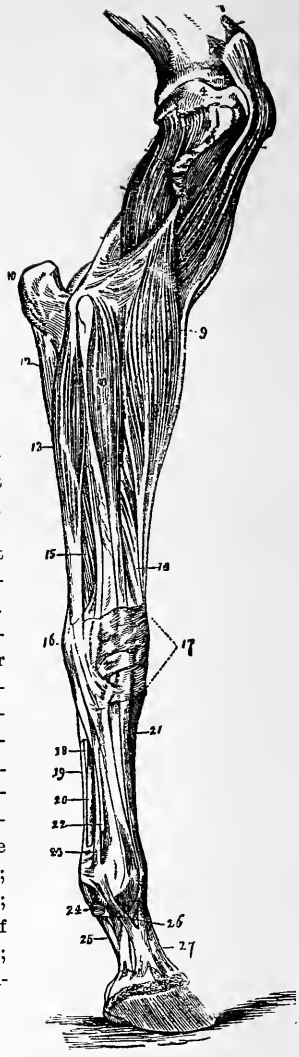

FIG. 368.

another. It is this pad which secretes the wall of the hoof. Below the pad the integumental membrane presents itself under the form of rosy leaves pressed one against another, and so disposed as to facilitate the gliding of the horn which is continually passing over it. This leafy tissue is called leaves of flesh or podophyllous tissue. The podophyllous tissue is continued under the foot by a velvety tissue similar to that of the pad, and which secretes the sole and the frog.

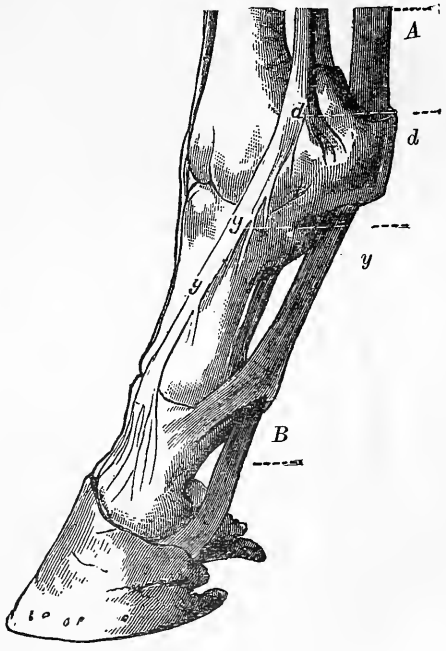

FIG. 369.—Tendons and Ligaments of the fore leg.

A. Flexor perforatus; *d*. Bifurcation of the sesamoidal ligament; *y*. Continuation forward of branch of the sesamoidal ligament; *B*. Continuation of the flexor perforans—afterwards inserted into the lower side of the ospedis.

B. The external parts of the foot, to the number of four: the *Wall*, the *Sole*, the *Frog*, and the *Periople*, forming together a horny box. The *hoof*, the interior cavity of which is exactly fitted to the external face of the sub-mural membrane, the two working one within the other, thus completing the general structure of the foot by furnishing to its sensitive parts an envelope thick, hard, resisting, yet elastic, incorporated with them and protecting them against the violence of bodies with which the foot, by the very nature of its functions, is required to be incessantly in contact. See Figs. 376, 377, and others further on.

The *wall* is that part of the horny case which forms its front and sides, but it does not end, as many may suppose, at the heels; it is folded back and prolonged to a point toward the extremity of the frog. These prolongations of the wall are termed the *bars*,

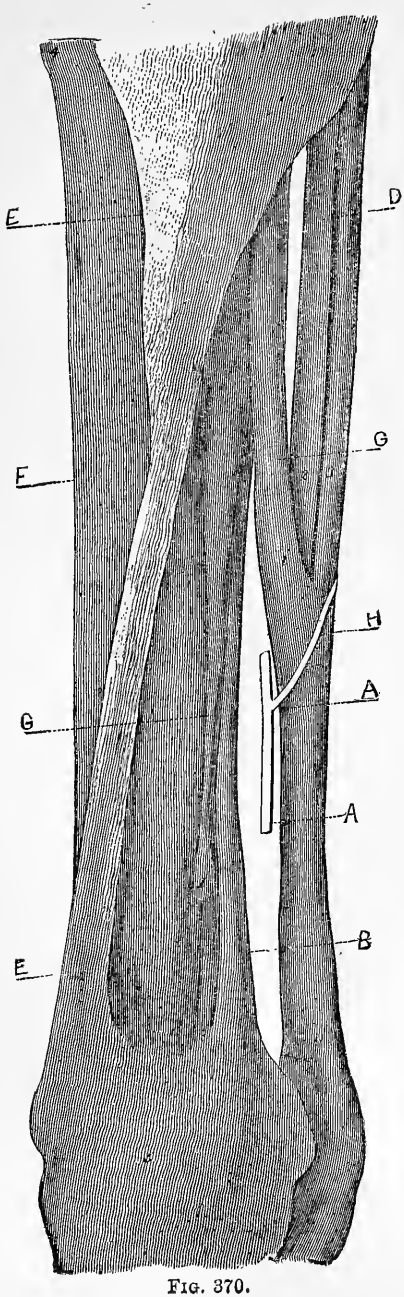

Fig. 370.

and the angles which they form at the heels, the *cleft.* The external surface of the wall is glossy, as though varnished; its internal surface is striated throughout, except at the hollowed bevel at its upper edge; the striæ of the external face of the wall (horny laminæ, keraphyllous tissue) are designed to work into the fleshy laminæ or podophyllous tissue. The bevel at the upper edge of the internal face of the wall, hollowed like a groove, is designed to receive the pad, and is pierced with a number of small openings, into which penetrate the filaments of the pad, which are true hair-cells.

Fig. 370.

A. The outside nerve, or that part of it where the branch *H* communicates; *B.* The suspensory ligament; *C.* The great ligament of the back sinew; *D.* The two back sinews, or flexor tendons; *E. E.* The extensor tendon; *F.* The cannon or shank bone; *G.* The splintbone, which is placed on each side, rather posteriorly, ofthe shank bone, beginning immediately under the knee,and extending tapering downward, and terminating at fig. 1 in a sort of bulb; *H.* The back sinews and their great suspensory ligament, apparently joined together. This, however, is not the case; it incorporates only with the perforans tendon, marked fig. 2, and so intimately, that they form one and the same substance, at the part marked by the small letter *i.* The perforatus, marked fig. 3, forms a sheath for the perforans, as already described in the article Strains. 4. The knee joint. 5. The fetlock-joint.

The wall or crust, or rather its lower edge, is divided into portions designated by different names, as explained in Figs. 376 to 379.

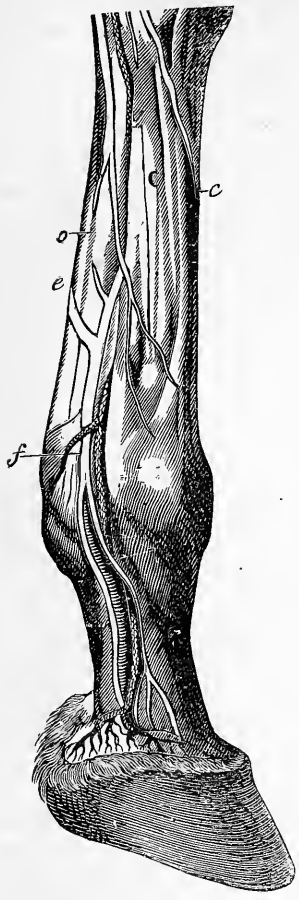

Fig. 371.

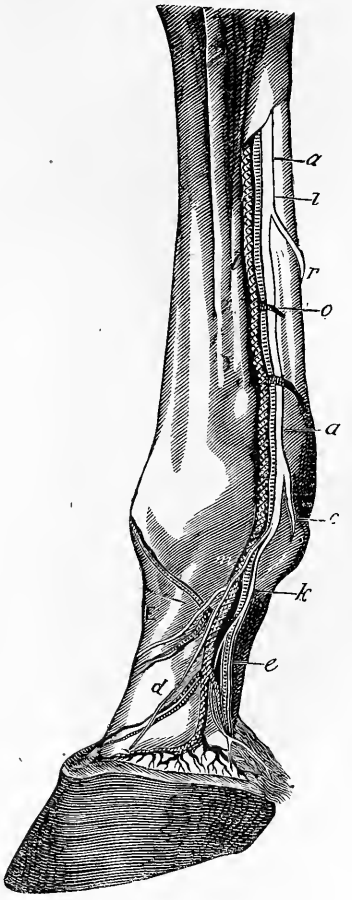

Fig. 372.

Fore leg, with skin removed, showing, veins, arteries, and nerves.

a, *l*, Plantar nerve; *O*, digital artery; *k*, median branch; *c*, branch of artery; *d*, pre-plantar branch of nerve.

The *sole* forms, with the *frog* and *bars*, the lower surface of the horny case ; it is in the form of a crescent, and is surrounded by the lower edge of the wall, to which it adheres; its lower sur-

face is concave, rugous, and formed of horn, which continually scales off and exfoliates. The upper surface is slightly convex, and pierced with an infinite number of little holes, into which penetrate the filaments of the velvety tissue or cushion. The external edge of the sole bears the same names as that of the wall.

Fig. 373.—Back view of foot with half of frog removed, showing perforans tendon as it is united to the bottom of coffin-bone. Drawn from Manikin.

The *frog* is situated in the posterior cleft of the sole between the two bars. It is formed of a more elastic description of horn, resembling india-rubber, which is secreted by a *sensitive frog*, covered with a velvety tissue like that which secretes the sole. The frog is in the shape of a triangle bent twice in its length and cleft in its base. It presents on its lower surface two projections bordering three hollows which are termed lacunæ; there are a central lacuna, and two lateral lacunæ. The projections and lacunæ on the inferior surface correspond to hollows and ridges on the superior surface. The apex of the triangle which constitutes the frog, is termed the *point* of the frog; the two ridges, separated by the central lacuna, the *branches* of the frog. These branches are prolonged behind a thin layer of soft and whitish horn, which after having surmounted the heels under the name of *glomes*, is extended in the form of a thin band which encircles the upper part of the wall, and is termed the *periople* or *coronary band.*

The foot is at once a means of support and source of elasticity; it is at the same time an organ of touch.

To adapt it to these triple functions, nature has endowed it with three properties apparently opposed, but which are nevertheless here made compatible with each other ; namely, in the first place, extreme external hardness, which is found in the envelope of horny substance; secondly, a certain flexibility, the combined result of the physical properties of this cortical envelope and of the mechanical arrangement of the different parts of which it is made up ; and, thirdly, a highly developed sensitiveness, the result of the exquisite organization of its integumentary membrane.

Fig. 374.—Side view of the foot with the part of the frog in previous cut removed, now in place, showing ligaments, etc., under the lateral cartilage which has been removed. Drawn from Manikin.

But, to make good the injury incessantly caused by wear on the horny bed which clothes it, the foot should possess the faculty of reproducing it in a manner so continuous that the activity of the reconstruction should be exactly proportioned to the rapidity of the destruction. This is, indeed, what actually takes place ; the foot is the seat of a highly important secretion—the horny secretion.

The nutritive functions, also, in the digital region are endowed with great activity, indicated especially by the great development of its vascular apparatus, the remarkable disposition of which is made known to us by anatomy.

Such are, in their entirety, the complex functions of which the foot of the horse is the seat.

As an *organ of support*, the foot has an essential duty, since it is through it that the entire machine is put in connection with the ground, while the point at which it is placed is in fact the *fulcrum* of the levers—the limbs—on which all the locomotive agencies work.

Fig. 375.—Foot with lateral cartilage in place, with outlines of nerves, ligaments, etc. Drawn from Manikin.

As an *organ of elasticity*, its duty is no less important when it is considered what enormous forces, the result of the weight of the animal combined with its powerful muscular contractions, all bear on that apparatus, and that it is the means of neutralizing the concussions which, without it, would be fatal to the entire mechanism, and particularly so to the limbs. The elastic apparatus furnished by the foot of the horse is very complex, for the greater part of the elements of which it is made up are conducive to this purpose.

A. The three phalanges obliquely inclined on the metacarpals or metatarsals, and sustained behind by the ligamentary and tendonous apparatus which has been mentioned, constitute an admirable means of neutralizing the weight of the body. At each step it is seen to yield and spring back like a bow that is bent and re-

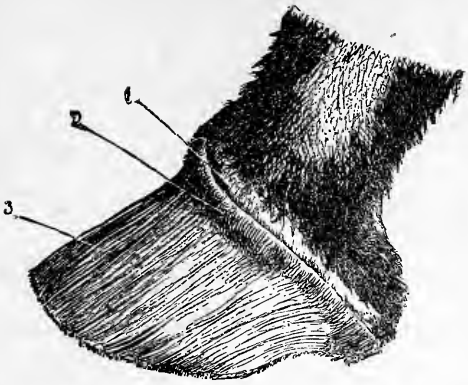

FIG. 376.—Lateral view of horse's foot after removal of the hoof.

1. Periople ring, divided by a narrow groove from the coronary cushion; 2. which is continuous with the plantar cushion, and joins the vascular laminæ; 3. through the medium of the white zone.

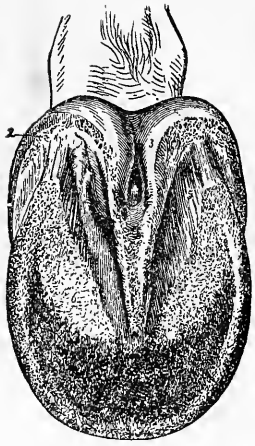

FIG. 377.—Lower face of the horse's foot, the hoof being removed.

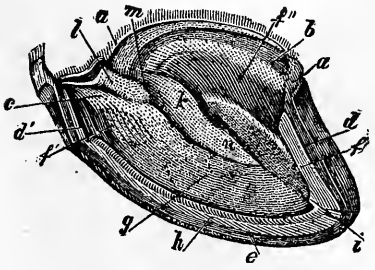

FIG. 378.

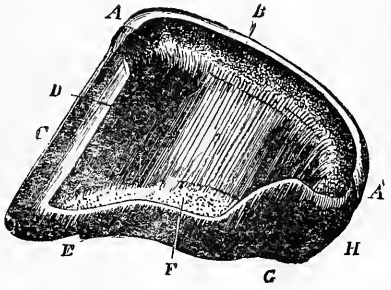

FIG. 379.

Two views of hoof with outer portion of the wall removed to show its interior. Referred to in the text.

a. a. Periople, or coronary frog-band.

b. Cavity in the upper part of wall for coronary cushion.

c. Upper, or inner, surface of "bar."

d. Vertical section of wall.

d'. The same at the heel.

e. Horizontal section of ditto.

f'''. Lateral aspect of a lamina.

h. Junction of the horny laminæ with the sole (the "white line").

i. Toe-stay at the middle of toe.

k. Upper, or inner, surface of the horny frog.

l. Frog-stay.

m. Cavity corresponding to a branch of the frog.

n. Ditto corresponding to the body of the frog.

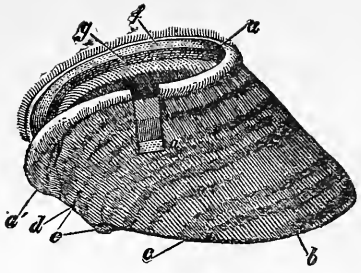

FIG. 380.—Hoof just removed from the foot; side view.

a. Inner face of periople, or coronary frog band, with some hairs passing through; *a'*. Outer surface of same at posterior part of foot; *a''*. A section through the wall to show its thickness; *b* to *c*. Quarter of the hoof, from *b* to the front is the outside (or inside) toe; from *c* to *d*, the outside (or inside) heel; *e*. Frog; *f*. Bevel on upper margin of wall for reception of coronary cushion; *g*. Keraphylla, or horny laminæ.

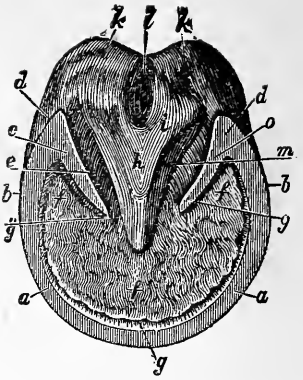

FIG. 381.—Plantar or ground surface of a hoof; right foot.

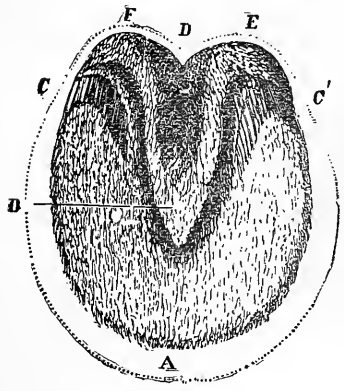

FIG. 382.

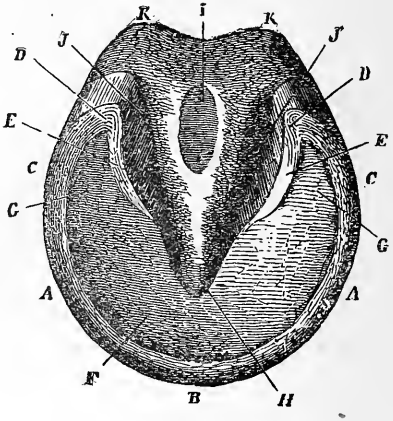

FIG. 383.

Foot with outer portion of the wall removed to show its interior. Referred to in the text.

The interval from *a* to *a* represents the toe; from *a* to *b b* outside and in side quarters; *c. o.* Commencement of bars; *d. d.* Inflexions of wall at the heels, or "buttresses;" *e.* Laminated lacuna; *f. f. f.* Sole; *g.* White line; *g. g.* Ditto between the sole and bar; *h.* Body of frog; *i.* Branch of frog; *k. k.* Glomes or heels of frog; *l.* Median lacuna.

leased. But it must be remembered that this arrangement becomes feebler in proportion to its length; that is to say, that the tendons sustaining the three phalanges become more weighted

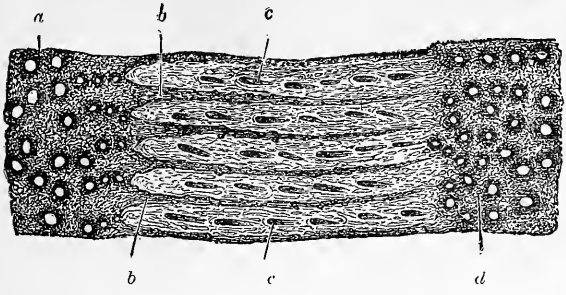

FIG. 384.—Horizontal section of the junction of the wall with the sole of the hoof.

a. Wall, with its horn tubes; *b. b.* Horny laminæ projecting from the wall; *c. c.* Horn-tubes formed by the terminal villi of the vascular laminæ, the horn surrounding them and occupying the spaces between the horny laminæ, constituting the "white line;" *d.* Horny sole, with its tubes.

and fatigued as the lever formed by these phalanges becomes longer.

B. The *plantar cushion* has duties indicated by its structure and position; it fulfills the office of a buffer on which shocks may be spent and extinguished. When subjected to shocks or the

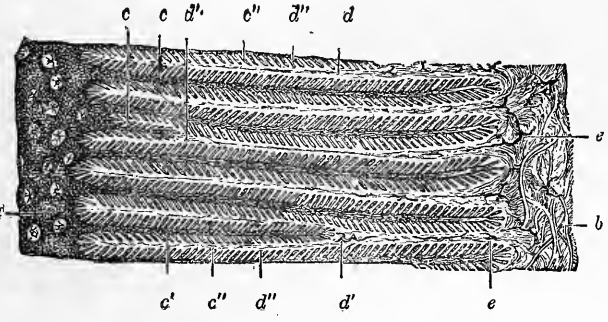

FIG. 385.—Horizontal section of the wall, and horny and vascular laminæ, to show the junction of the latter and the laminelle.

a. Inner portion of the wall with the laminæ arising from it; *b.* Vascular laminæ; *c.* Horny laminæ of average length; *c'. c'.* Unusually short laminæ; *c''. c''.* Laminella on the sides of the horny laminæ; *d.* Vascular laminæ passing between two horny ditto; *d'.* Vascular lamina passing between three horny laminæ; *d''.* Lateral laminellæ; *e. e.* Arteries of vascular laminæ which have been injected.

pressure of weight, it flattens and extends, to resume its form when the pressure is removed; but in its enlargement it presses on the cartilages, which yield because of their flexibility and elasticity, and come back to their own shape immediately when the action of the plantar cushion ceases.

C. The *natural hoof* is not only *flexible*, as is affirmed by Lafosse, but perfectly *elastic*, since it recoils on itself after having been lightly opened behind. Open behind by nature—evidently with intention, for nature does nothing in vain—when the plantar cushion comes to be compressed, and bears upon the lateral cartilages of the bones of the foot, these cartilages transmit the pressure received to the *quarters* and *heels* of the *wall*, which yield and open slightly, drawing with them in their movement the branches of the *sole*, which itself, pressed also by the plantar cushion, sinks a little ; at the same time the frog, in direct contact on its superior surface with the plantar cushion, lodged in part in its folds, opens them, unfolds them a little, and forces the *branches* to open also. All these movements are certainly very slight, much less sensible than Bracy-Clark affirms, but nevertheless very perceptible, when studied on young subjects which have not as yet been shod, and in which the diverse functions of the foot are yet complete. The older the subject, the more obscure they become.

It is to these diverse motions of flexion and extension of the phalangeal arrangement, the spreading and retraction of the plantar cushion and the horny case, that is owing the deadening and extinction of the forces transmitted by the limbs, or of the shocks of the ground ; and they are the combined result of functions which it is necessary to preserve in their fullest integrity.

As an *organ of touch*, the foot of the horse is, in spite of its horny envelope, a very delicate organ. This is proved by the great number of nerves which anatomy shows to enter into its organization, the knowledge which it possesses of the condition of the ground over which it moves, and on which it preserves its equilibrium at different paces, whatever may be the form of the ground, its consistency, its inequalities, or the obstacles with which it is strewn.

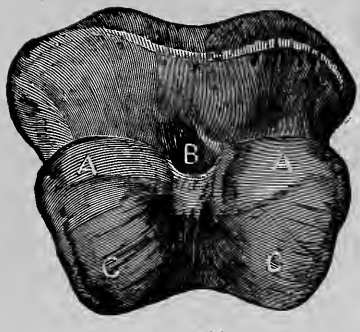

FIG. 386.

FIG. 387.

PLATE I.

Fig. 1.

A view of the lower extremity of the coronary bone, seen from behind, to show the surfaces articulated with the navicular and foot bone.

A A The surface articulated with the navicular bone.

B Cavity filled with fat.

C C The surface articulated with the foot bone.

Fig. 2.

A posterior view of the navicular and foot bone, seen from behind in their relative situation.

A A A A Rough surface of the navicular bone, from which the upper ligaments take their rise.

A B Smooth surface corresponding with the cavity in Fig. 1, at B, filled with fat

FIG. 389.

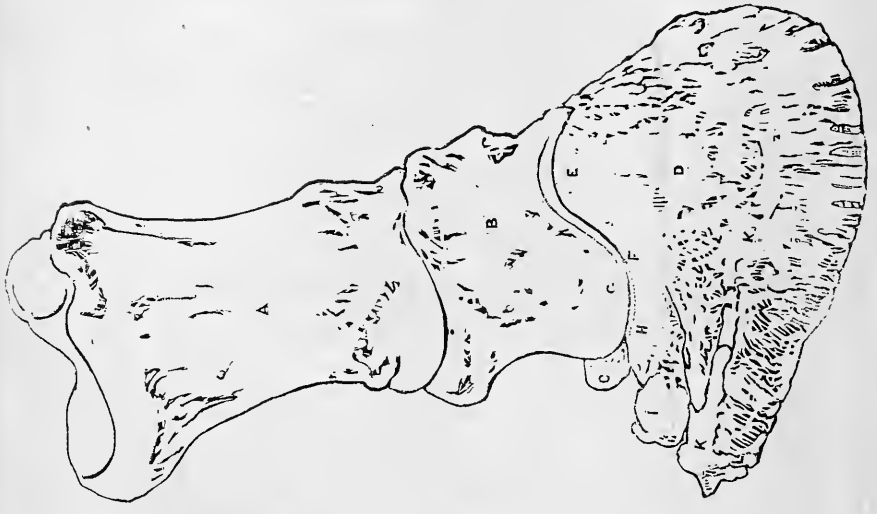

FIG. 388.

PLATE II.

PLATE II.

A front view of the bones of the fore feet of a horse in their relative position.

a The pastern bone.

b The coronary bone.

c The navicular bone.

d The foot bone.

e The point of insertion of the tendon of the extensor muscle.

f A concavity to give attachment to the ligament which unites the foot bone to the coronary bone at *g*.

h A continuation of the same concavity, to which the cartilage of the foot bone is attached.

i i The upper and lower processes of the foot bone.

k k A groove in the foot bone, which receives a division of the main artery, coming round from behind.

k l A groove receiving another division of that artery, which proceeds round the extreme edges of the foot bone.

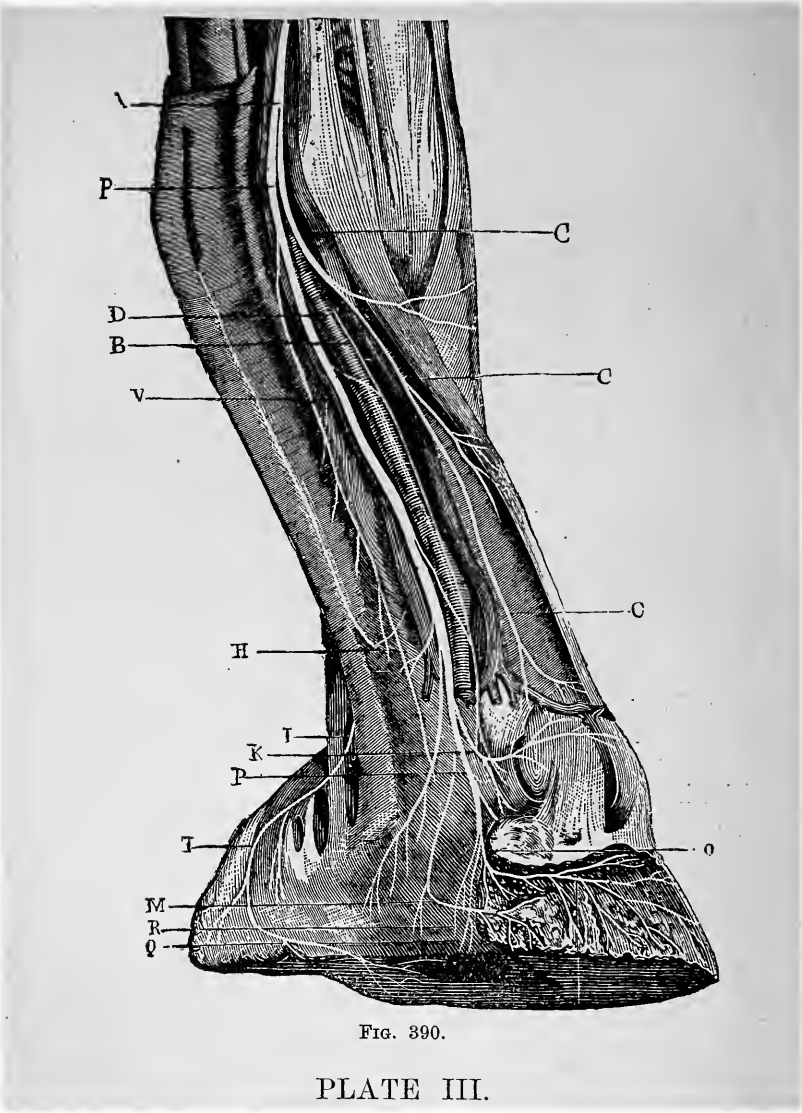

FIG. 390.

PLATE III.

A, Plantar nerve; B, Median branch; P, Posterior branch; C, Anterior branch; D, Digital artery; H, Inconstant division given off to the cartilaginous bulbs; I, I, Branch to the plantar cushion; K, Transverse coronary branch; M, Podophyllous branch; O, Pre-plantar branch; Q, Descending ramuscule to the fissures of the patilobes; R, Ramuscules accompanying the digital artery in the plantar fissures; V, Vein whose presence is not constant, and which sometimes accompanies the plantar nerve throughout its phalangeal course.

Fig. 391.

PLATE IV.

FIG. 392.

PLATE IV.

PLATE IV.

A Pastern Bone.
B Coronary Bone.
C Navicular bone.
D Foot bone.
E Ligament uniting the muscular and foot bone over the navicular, and inserted on the bottom side of the coffin bone.
F Sensitive or fibrous frog.
G Navicular bone.
H Tendon of extensor muscle of the coronary bone.
I Tendon of the extensor muscle of the foot bone.
K Tendon of flexor muscle of coronary bone.
L Tendon of flexor muscle of coffin bone.
M Sheath of last tendon.
O Ligamentous substance, called sensitive frog.

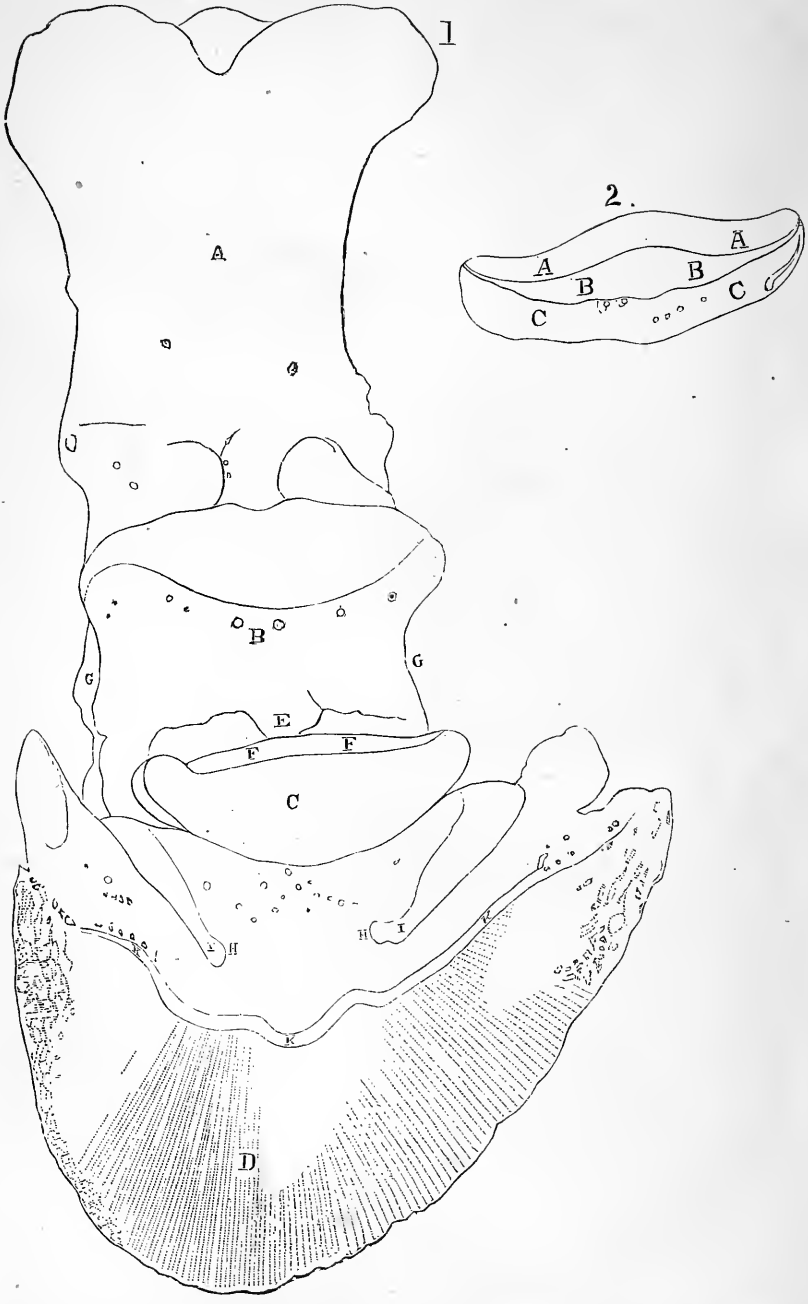

FIG. 393.

PLATE V.

FIG. 394.

PLATE V.

PLATE V.

Fig. 1.

A back view of the bones of the fore foot in their relative situation.

A Pastern bone.
B Coronary bone.
C Navicular bone.
D Foot bone.
E A cavity, which in the natural state is filled with fat.
F F The upper surface of the navicular bone, from which two ligaments arise, and pass round the lateral depressions in the coronary bone, marked G G.
B B Points of attachment of the ligament which unites the navicular bone to the foot bone.
I I Two grooves in which two main trunks of the arteries are continued into the foot bone.
K K K The line of insertion of the tendon of the flexor muscle.

Fig. 2.

A view of the anterior and inferior surfaces of the navicular bone detached from the other bones.
A A The anterior surface opposed to the coronary bone.
B B The inferior surface opposed to the foot bone.
C C A posterior portion of the inferior surface excavated for the purpose of giving a firmer attachment to the lower ligament

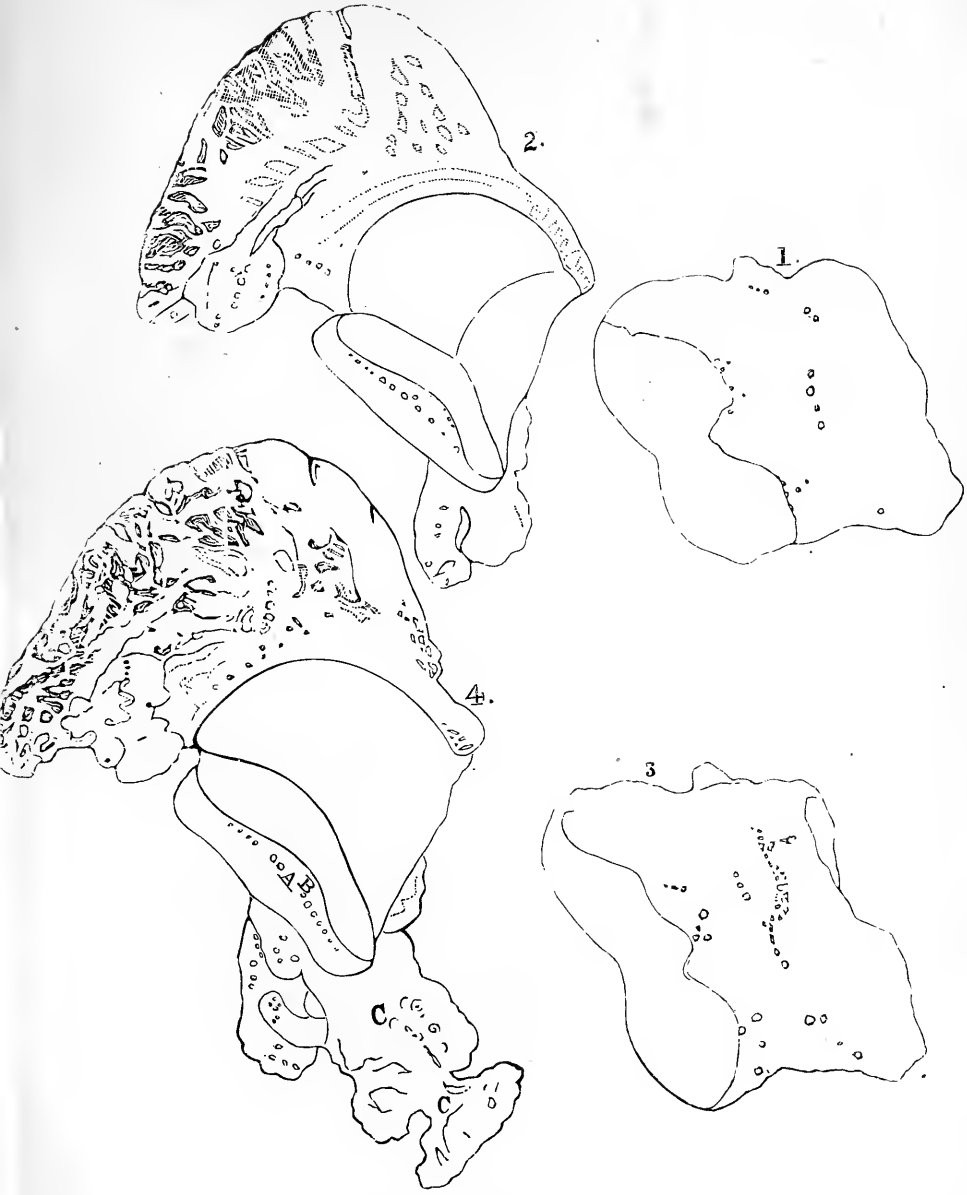

Fig. 395.

PLATE VI.

PLATE VI.

PLATE VI.

A comparative view of the bones of the fore and hind feet.

Figs. 1 and 2.

Bones of the fore foot explained in Plate I.

Fig. 3.

Coronary bone of the hind foot.

Fig. 4.

Foot bone and navicular bone of the hind foot, showing that the surface of the foot bone, which is articulated with the coronary bone, is rather more concave than that of the fore foot, and the position of the navicular bone more upright; so that the coronary bone bears more upon the foot bone and less upon the navicular bone. That surface of the navicular bone (A B) which in the fore foot was smooth, appears rough, and the upper ligaments are attached to the whole of this surface.

C C Portion of the cartilage of the foot bone ossified, which is not natural, but so frequently met with that I thought it necessary to notice it, merely by giving an outline of it. See large variety of morbid specimens in chapters on Navicular Joint Lameness and Laminites.

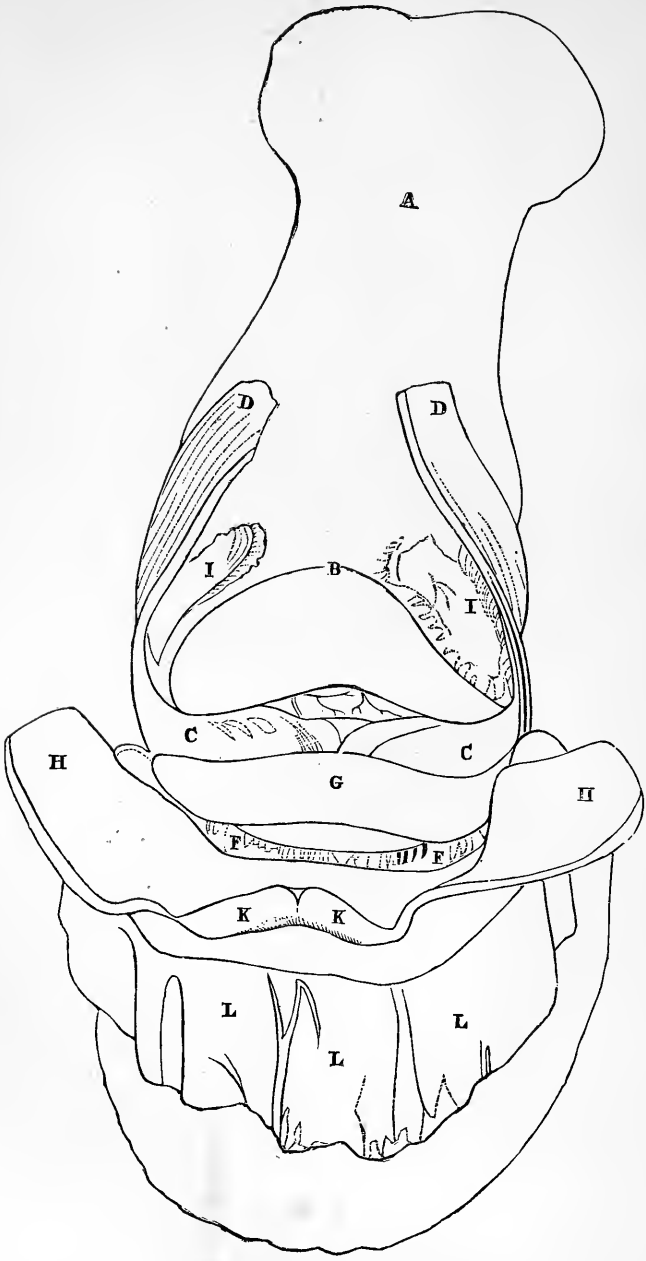

FIG. 397.

PLATE VII.

Fig. 398.

PLATE VII.

PLATE VII.

A front view of the bones of the fore feet, to show the ligaments.

A The pastern bone.

B The coronary bone raised from its natural situation, to show the upper ligaments of the navicular bone at C C, which pass round each side of the coronary bone, and are lost upon the anterior surface of the pastern bone at D D.

E The foot bone bent forward, to show the lower ligaments of the navicular bone at F F.

G The navicular bone.

H H Ligaments that unite the coronary bone to the foot bone.

I I The surfaces to which the ligaments H H are attached.

K K The tendon of the extensor muscle cut off at its attachment to the foot bone.

L L L The skin turned down to expose the ligaments.

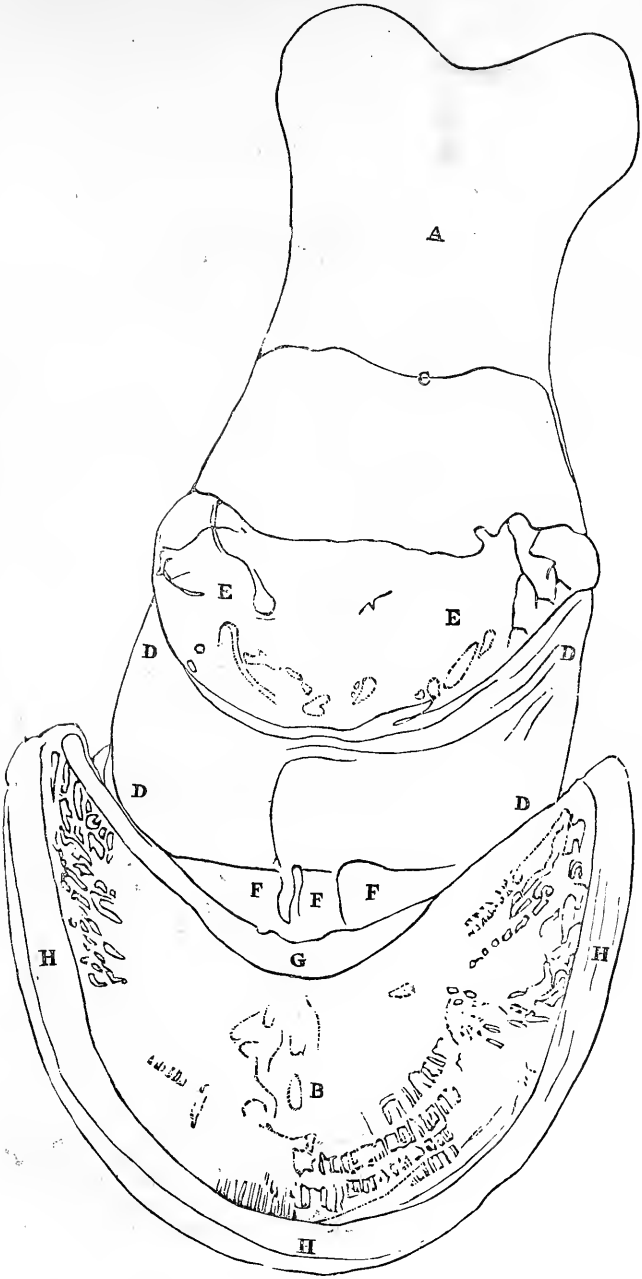

FIG. 399.

PLATE VIII.

Fig. 400.

PLATE VIII.

PLATE VIII.

A posterior view of the bones of the fore foot, to show the ligaments of the sesamoid or navicular bone.

A The pastern bone.

B The foot bone.

C The cut end of the tendon of the flexor muscle of the coronary bone.

D D D D The upper ligaments of the navicular bone, as they pass round the sides of the coronary bone.

E E A thin expansion from the ligaments D D D D covering the mass of fat lodged in a cavity in the coronary bone.

F F F Attachment of the lower ligament of the navicular bone to the foot bone.

G G The tendon of the flexor muscle cut off at its insertion into the foot bone.

B B B The natural surface of the villi continued from the true skin.

FIG. 401.

PLATE IX.

FIG. 402.

PLATE IX.

PLATE IX.

Three views of the cartilages of the foot bone of the fore foot attached to the bone.

Fig. 1.

A view of the inner side of the cartilage.

Fig. 2.

A view of the outer side of the cartilage.

A A The part of the cartilage which terminates by a small curve, and over which those parts of the hoof are carried which are called the bars.

A B Those parts of the extremity of the cartilage which are connected to the under surface of the foot bone.

F F F F Holes for the passage of blood-vessels.

Fig. 3.

A view of the cartilage from the sole.

C C Upper posterior extremities of Fig. 2, A B, the posterior edges of which are connected to the under surface of the foot bone at D D by a fatty ligamentous substance, which serves as a cushion to the flexor tendon E E, and is what is commonly called a fleshy frog.

Fig. 403

PLATE X.

A side view of the foot, to show the arteries and veins. In the sketch the arteries are shaded, and the veins are not.

Fig. 404.

PLATE XI.

A view of the posterior surface of the foot, to show the arteries and veins. In the sketch the arteries are shaded, the veins are not.

FIG. 405.

PLATE XII.

A view of the under surface of the foot bone, with its cartilages and fleshy frog. The skin which immediately covered the whole is removed, and exhibited in the next Plate.

A A Cut edges of the skin.

Fig. 406.

PLATE XIII.

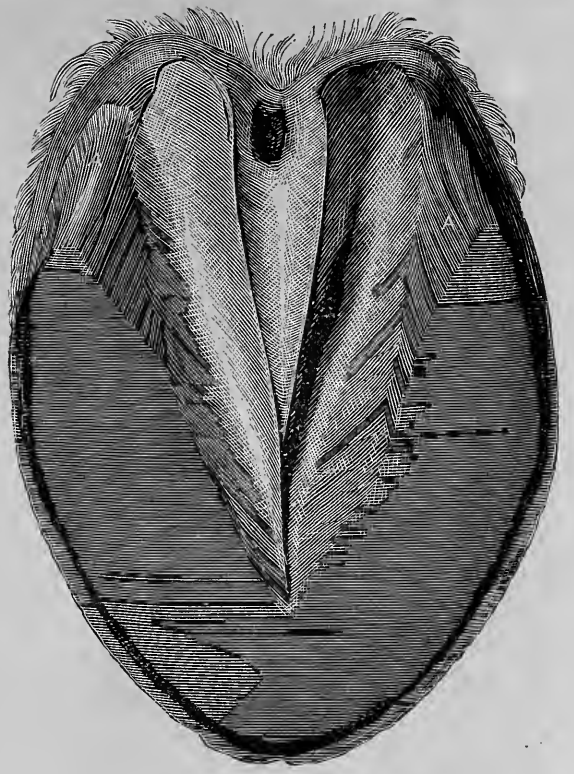

Fig. 407.

PLATE XIV.

The under surface of the foot seen in its natural situation, the hoof having been removed.

A A, Continuation of the fibrous structure which covers the anterior surface of the foot.

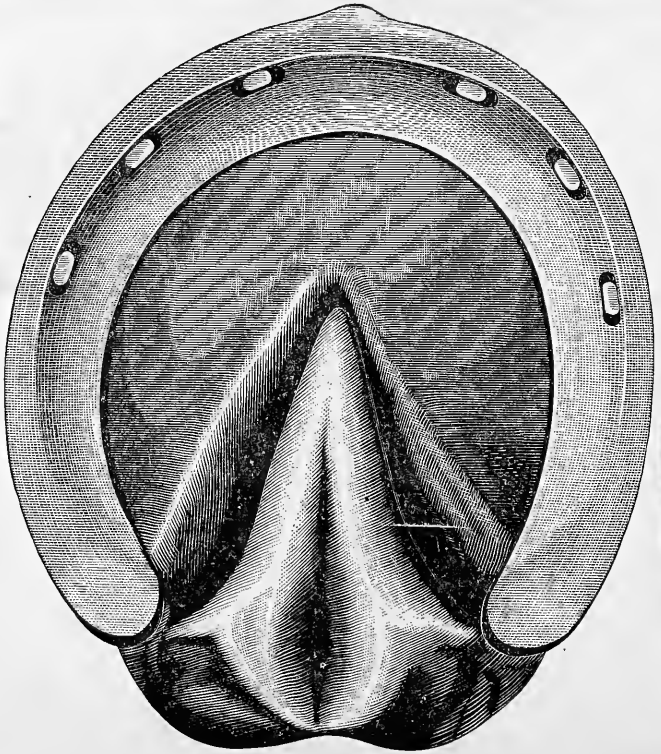

FIG. 408.

View of right fore foot and shoe adjusted.

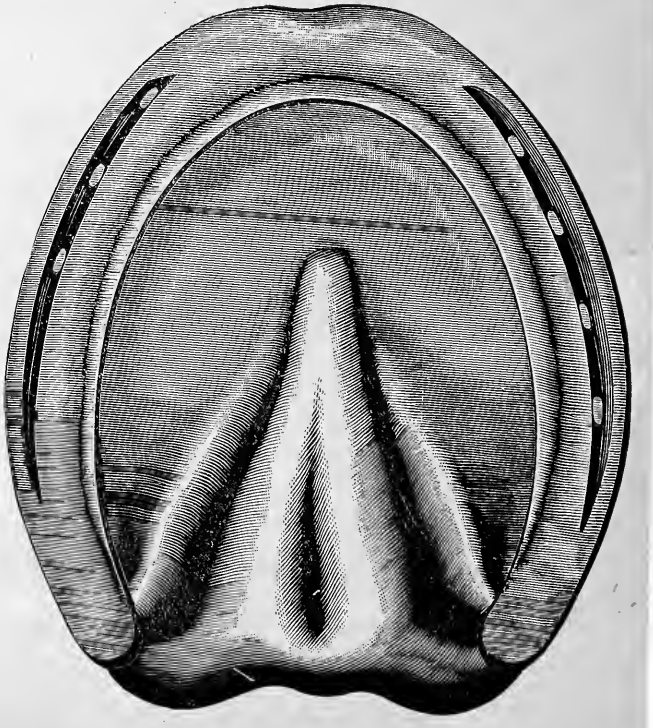

FIG. 409.

Left hind foot with shoe properly adjusted.

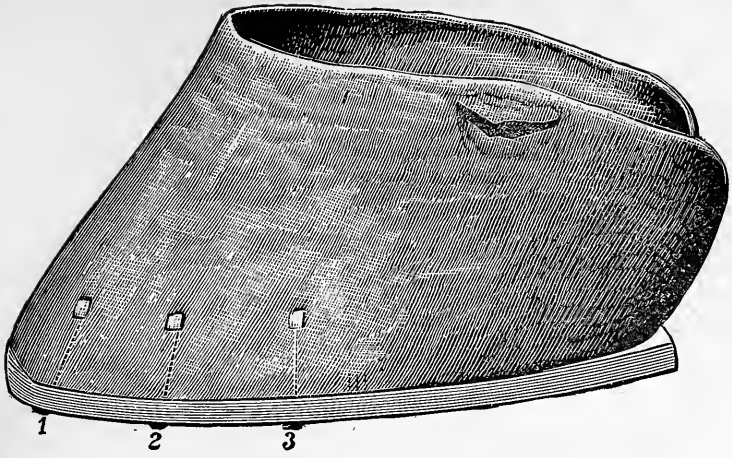

FIG. 410.

An exact drawing of a hoof, on a scale of three-fourths size, which was macerated* from the foot of a five-year-old horse that was never shod but once. The shoe is according to the author's idea of form, and the nailing, how it should be done.

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* The hoof from which the above drawing, and sections of the same following, were made, was as nearly a perfect specimen as could be found. It was secured by Prof. McLellan, and by him given to Mr. David Roburg, referred to in another part of this chapter, by whom it was highly prized as a model. The writer called upon this gentleman, and upon making known his desire to secure the specimen to make drawings from, it was cheerfully presented to him for the purpose. The difficulty of securing a competent artist to make the drawings required, notwithstanding the greatest effort, nearly defeated the accomplishment of this object. One was finally obtained for a few hours at a time, until the drawings here given were secured.

It was the intention of the writer to give in this part not only a number of illustrations showing different kinds of feet and shoes, but also the changes produced by contraction and disease. With this object in view, several visits were made by him to the docks at 28th street, New York, where all dead subjects are daily collected, to make suitable selections. But after weeks of persistent effort he found it impossible to secure a competent artist to make the drawings, and in consequence the project had to be given up, but hope to be able to accomplish this at some future time.

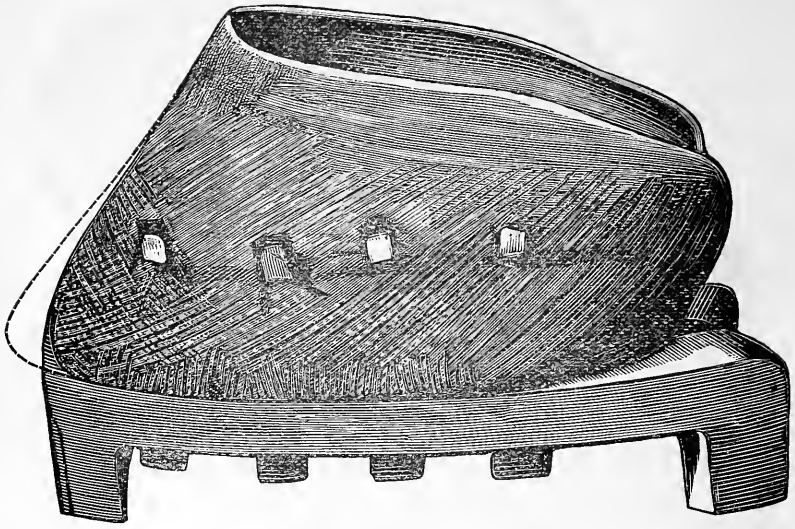

Fig. 411.

Showing the exact outlines of the hoof, Fig. 410, with the form of adjustment and nailing of shoe as usually done. The shoe and nails are too large, and the nails too many in number. The shoe set too far back, and the nails driven so high and deep as to endanger driving into the quick, the real cause of harm being made apparent by reference to Figs. 421 and 422. The hoof is rasped away so much as to weaken and destroy its symmetry; a common cause, as will be seen, of destroying the natural adjustment of good feet, and so weakening the wall and sole as to produce lameness and contraction.

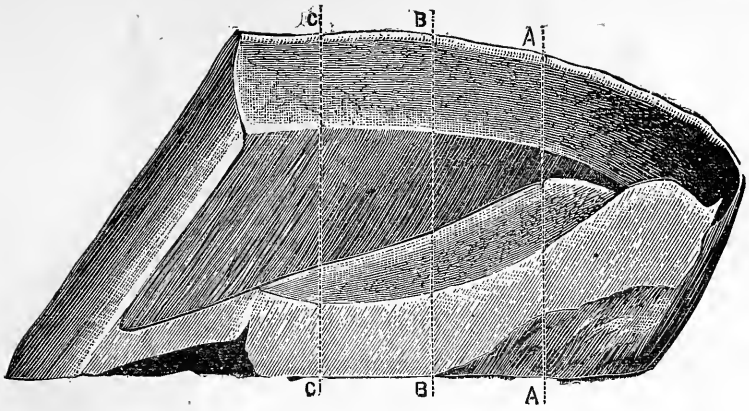

FIG. 412.

Fig. 410, hoof the same size, cut in two, showing the thickness of wall, sole, and frog at the center. The circular form towards the toe could not be fully brought out by the artist, as shown in the hoof, but is an exact re-production of the thickness and proportion of the various parts.

FIG. 413.—View of the inside of the hoof. Drawn by Mr. Norman, one of the leading artists of New York, under the speeial supervision of the writer.

a Coronary ring; *b* Laminated structure; *c* The frog; *d* The sole.

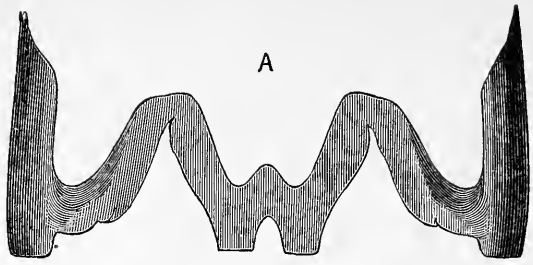

Fig. 414.

A, Cross section of hoof, Fig. 410, indicated in 412, showing the exact thickness of wall, sole, and frog at A.

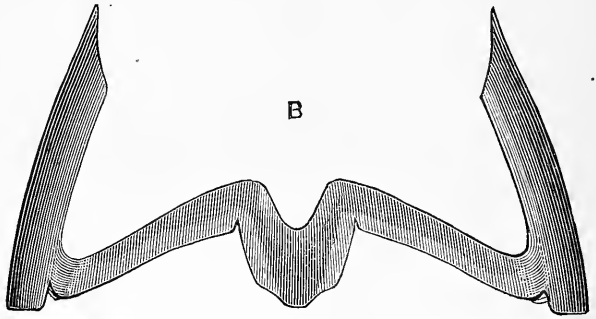

Fig. 415.

B, View of the next section of the wall of the same, drawn on an exact scale as indicated in the foregoing

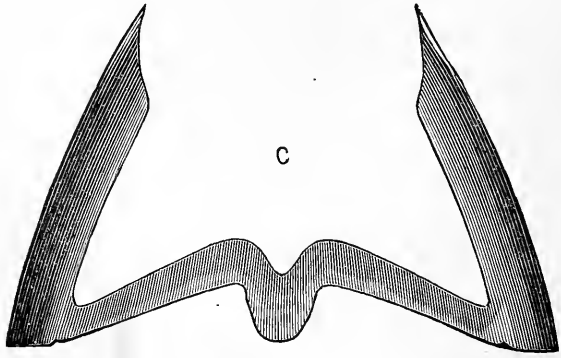

Fig. 416.

C, Third cross section of the same, showing the thickness of wall, sole, and frog at the points indicated by the same.

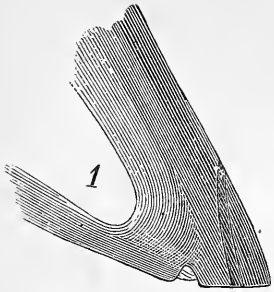

Fig. 417.

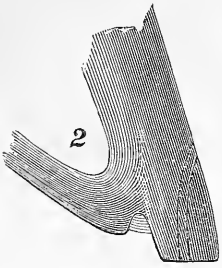

Fig. 418.

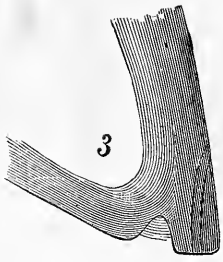

Fig. 419.

1, 2, 3, show the thickness of wall and sole full size at points indicated. The inner or soft parts of the wall (not represented as clearly by the engraver as it should be) represents about one-eighth of an inch less in thickness than shown in 1 and 2. The outlines of the hard part, as originally drawn, being cut away by the engraver, show the wall on this account thicker than it should be. No. 3 was drawn to show the thickness of hard fiber with the soft or laminated part omitted, which will give a good idea of the small amount of horn there is in an average light foot to nail to, and how easy it is to break and weaken it seriously by nailing deeply, rasping and cutting away recklessly, as shown by Fig. 411. The notches between the sole and wall indicate the degree to which the soft horn at this point had been macerated or dissolved by the action of moisture to which the hoof had been subjected for two weeks.

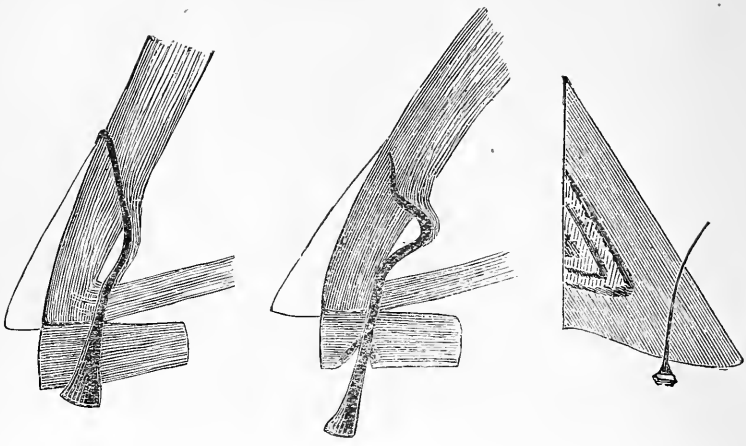

Fig. 420. Fig. 421. Fig. 422.

Sections of hoof, the first two showing an outline of the wall at the points marked, with an estimate of the amount usually cut away in rasping and fitting the foot to the shoe. Also showing the liability to drive the nails so deep in such cases as to be bent into the quick when clinched. The third shows the size of nails and the depth they should be driven, in proper proportion to prevent injury to the foot.

Not five horses in a hundred, shod a few years by the system in general use, have sound, healthy feet. Contraction and its consequences, — corns, quarter-cracks, thickening of lateral cartilages, inflammation and ulceration of the navicular bone and coffin joint, with other changes of structure that make the horse liable to soreness or incurable lameness, are the rule ; while horses having sound, healthy feet, are the exceptions. The loss to the people of the country from this cause—ignorant, bad shoeing—is enormous, and could, except in some serious cases, be entirely prevented or cured by good shoeing and proper treatment.

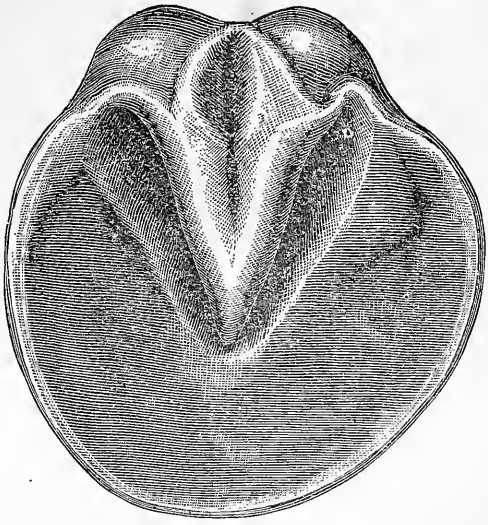

Fig. 423.—Foot of a five-year old horse that had never been shod.*

This being true, it is of the greatest importance, not only as a matter of humanity to horses, but economy to owners, that such knowledge as will prevent or overcome these serious causes of injury and loss, be made available; and this, as explained, I have made a special effort to do in this chapter. It is idle to assume that shoeing-smiths would intentionally spoil or injure the feet; that they are not willing to learn or heed the teachings of reason. While there are a great many who are unpardonably stupid and ignorant, and who, in the blindness of their prejudices, are not willing to learn ; yet, as a class, the writer never found any peo-

* Cuts Nos. 423 to 428 were copied from Bracy Clark's treatise on shoeing, published in 1809. No. 423 is an illustration of the foot of a five-year-old horse which had never been shod. The others in the order as placed and explained, showing the atrophied, contracted condition of the heels and quarters after shoeing. These are followed by drawings from casts of colts' feet made by the author. In the part on contraction, the causes and proper treatment will be found explained.

ple more appreciative of special points of interest to them, than shoeing-smiths.

Nor is the fault wholly to be accounted to the shoer. The man who scoops out and rasps the foot most persistently to make it look artistic, puts the most iron into the shoe, and nails it on so firmly that it will remain so indefinitely, and works the cheapest, usually gives the best satisfaction, the owner believing he is getting the most for his money ; the health of the foot and the comfort of the animal, being a matter of secondary consideration.

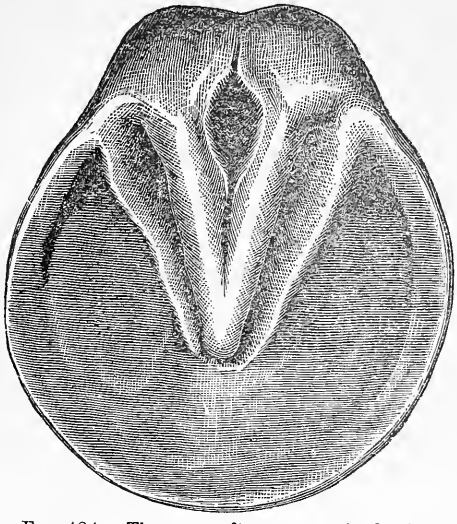

Fig. 424.—The same after one year's shoeing.

The foot is, next to the eye, the most beautiful and perfect in the details of its structure. It is in every particular the most perfectly adapted of any part of the body for giving the greatest possible strength and elasticity ; and, if not interfered with, is capable of sustaining all the strain and wear to which it can be reasonably subjected. But when exposed to causes which bring about disease and change of structure, there are also involved, to a greater or less degree, the health and mobility of the

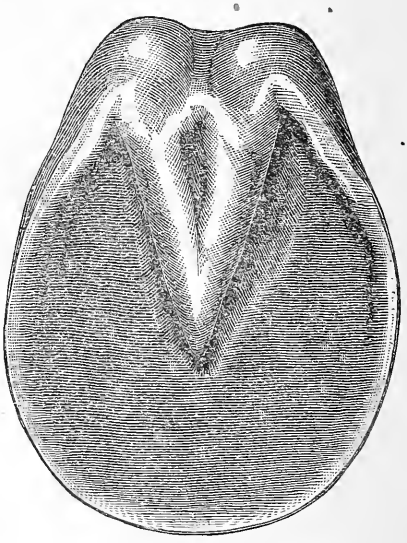

Fig. 425.—The same after three years' shoeing.

entire limb. Any one knows that an injury to the toe or any part of the foot is liable to cause severe pain and disturbance throughout the entire limb. The effect is the same in the horse's foot. This being true, we want to learn, if we can, the causes of these derangements, and how to prevent as well as overcome them.

I regard this subject so important as to demand more than ordinary care to make it so simple and practical in its explanations that it can be easily understood, as well as give such proofs of the faults common to the present system of shoeing that the necessity for correcting them will be apparent.* To aid in doing this, I give a large variety of illustrations of the hoof and internal parts of the foot, which will give a good idea of its general structure. Among these will be found many entirely new illustrations. For example, cuts showing parts of hoof cut away, and different views showing tendons, lateral cartilages, etc.; also a great variety of shoes which have been drawn or copied under my special supervision.

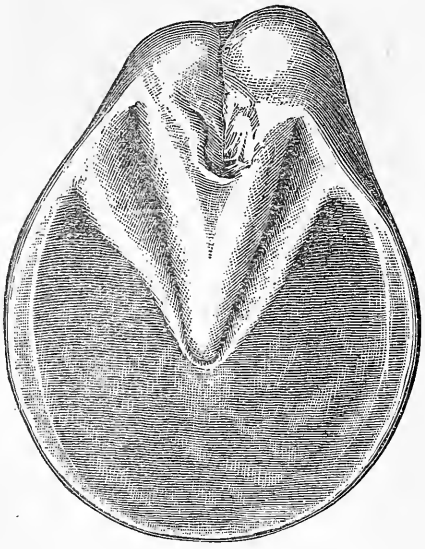

FIG. 426.—The same after six years' shoeing.

* This chapter, as first written, was limited to simple details; but upon reading it carefully it became evident to the writer that a more complete and thorough explanation of the subject was necessary, in order to make it worthy of acceptance for general reference. He then, as a preliminary step, obtained every work available that had been published during the past hundred years. He also took notes from leading experts on the subject of shoeing, particularly from Dr. Hamill, formerly professor of Pathological Shoeing, in Columbia Veterinary College, of New York, and one of the most thorough professional students of the foot in the country. After re-writing the chapter, it was first submitted to him for revision and correction; next, to Hon. Wm. C. Gage, of Battle Creek, Mich., who had been led to study the subject in the preparation of a work on Shoeing some years previous. Again, to Dr. McLellan, of Bridgeport, Ct., the present professor of Pathological Shoeing in the above-named College, and accepted as one of the very highest author-

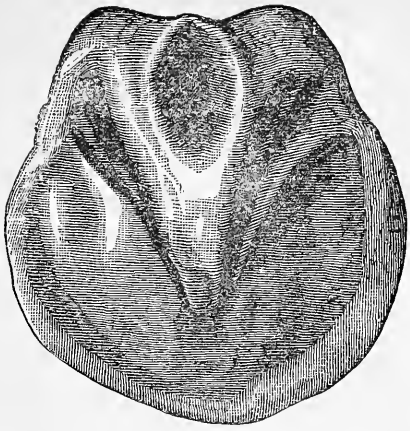

FIG. 427.—Foot of a five-year-old horse that had never been shod.

point which I find the author in his anatomical description has not made sufficiently strong to arrest the attention of the reader; namely, the amount of blood that passes through the foot; and I would advise the reading of the description of the circulation of the foot, given in the chapter on Laminitis, or Founder.

Many years ago, in Buffalo, N. Y., a well-known veterinary surgeon, a man of unexceptional skill and experience, told me that years ago a man bought

In addition, at the conclusion of the chapter will be found extracts from a number of leading authors, followed by the best anatomical description obtainable. This course I have thought advisable, for the reason that shoers and also most owners would be likely to read with more care and attention the details of such a description, after becoming interested in first reading the details of treatment.

There is, however, one

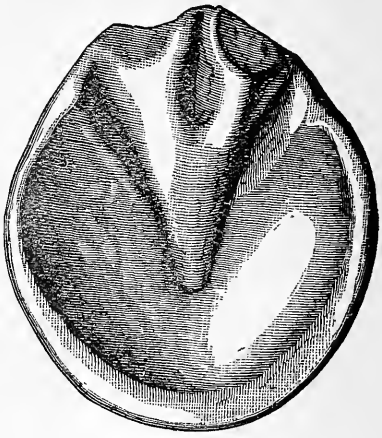

FIG. 428.—The same after one year's shoeing with thick shoes.

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ities on the subject. It was afterward read by Mr. David Roburg, of New York, who is probably one of the very best expert shoers in the country. The article being rather lengthy, it was particularly desired of them to point out any part that could be omitted with advantage; but it was the opinion of all that no part could well be dispensed with. Dr. Hamill and Prof. McLellan made some additions, which are noted. The writer was particularly interested in Mr. Roburg's advice on contraction, as he is a special expert on the subject, but he suggested no changes.

out a livery stable in that city, and put all the horses on short shoes or tips; that he believed at the time that the horses would be ruined by such treatment, but, to his surprise, they were greatly improved; several of them that had been affected with obstinate corns, and which he had been called upon to treat, and could do little more than palliate, though for the first few weeks they traveled sore, entirely recovered; and that the horses of his stable had better condition of feet than any in the city. Said he, "The whole point of success in the Goodenough shoe is, that the iron is so soft that it wears down rapidly, and lets the feet come to the ground."

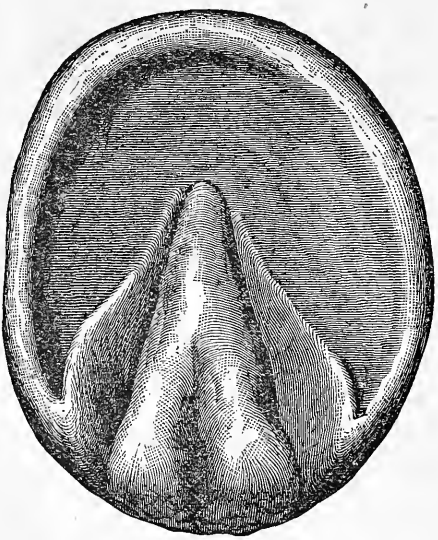

FIG. 429.—Foot of a four-year-old colt that had never been shod.

These statements were so suggestive to the writer that they led to his studying the conditions of shoeing with more discrimination and care. It was noticed, first, that the feet of young horses that had not been shod, no matter how driven or worked, except the wearing away of the outer rim of the wall, retained a sound, healthy condition. This being true, why the necessity of thinning out the sole, opening up the heels, trimming the frog and other parts, and loading down the feet with an amount of iron of such form as to be in most cases entirely out of proportion to the proper adjustment and wear required?

The writer was next led to observe that horses shod with the most care, according to foregoing principles,—the bottom of the foot and frog abundantly cut away and scooped out, the shoe filed and fastened on firmly, the whole made artistic by rasping down the outer surface of the hoof—had the worse condition of feet; while those shod most carelessly or quickly, barely leveling the wall, without regard to sole or frog, and nailing on the shoe

with, perhaps, a few hurried rakes of the rasp over the clenches and lower edge of the wall, maintained the best condition of health.

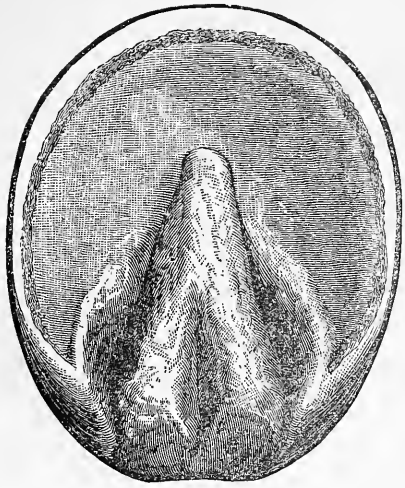

FIG. 430.—Foot of a five-year-old colt that had never been shod.

This is particularly noticeable in horses that travel on ground which allows the feet to settle into it, so as to bring more or less pressure upon the sole and frog. These results are more noticeable in large cities, especially in New York, where there are large lines of travel that afford ample opportunity of studying the condition of the feet, in conjunction with the method of paring, and the form and weight of the shoe.

It will be noticed, first, that those having thick shoes with high calks, show a greater or less degree of curling under of the quarters, with so much absorption and weakening of them as to make them more or less sore or lame. Or, when the foot is flat, the quarters resting upon such largely concave surfaces (as shown by sectional drawings of shoe), the foot becomes convex, or the frog settles down below the bearing of the heels. This causes the foot to become so weak as to be unable to bear the strain of severe work, while those having the shoes

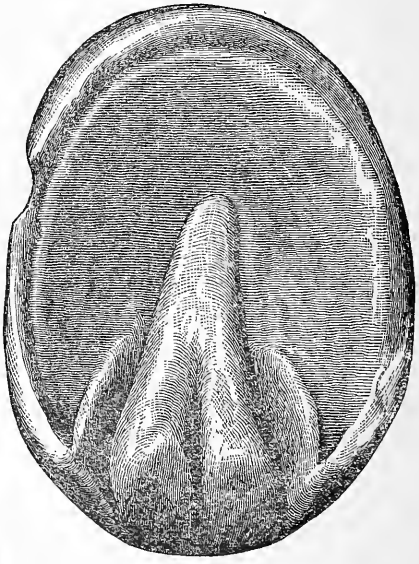

FIG. 431.—Foot of a three-year-old colt that had never been shod.

low or worn down, have broader and stronger heels. This will be more noticeable in horses used exclusively on certain lines, that wear shoes without calks, or those with slight elevations around the outer edge, which soon wear down and admit of a reasonably close contact of the foot with the ground.

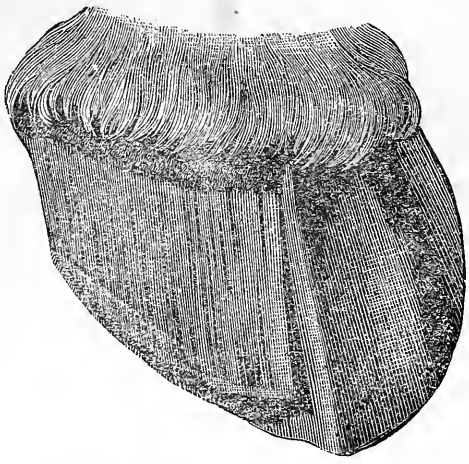

FIG. 432.—Half of hoof removed, showing coronary ring or cushion from which the hoof grows.

Upon inquiry into the mode of adjusting such shoes, it was ascertained that the invariable rule was, simply to lower the wall, fit and nail on the shoes without touching sole or frog, except to remove or scale off any extra accumulations. Companies adopting this method all admitted that it was not only a great saving, but greatly improved the condition of the feet.*

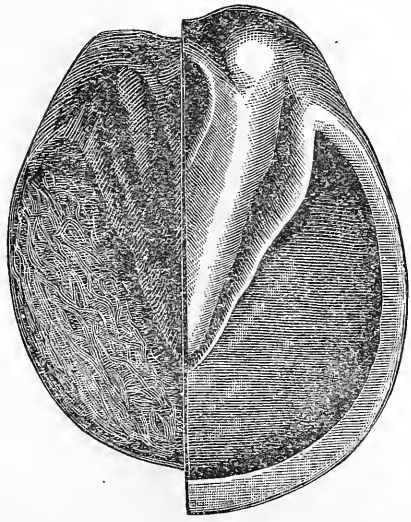

FIG. 433.—Bottom view of the above.

We see there is rarely any trouble with the feet, no contraction, quarter-cracks,

* I present a series of illustrations showing the bad effects of a few years' shoeing with thick shoes which removed all contact of the sole and frog from the ground, the results of careful experiments made by Bracy Clark, and published in 1809. First, of a healthy, natural foot; next, showing the degree of contraction and change of structure produced in the same foot after one, three, and six years' shoeing.

corns, or other causes of derangement, until after being shod; also that the feet of the Indian ponies, though ridden and driven

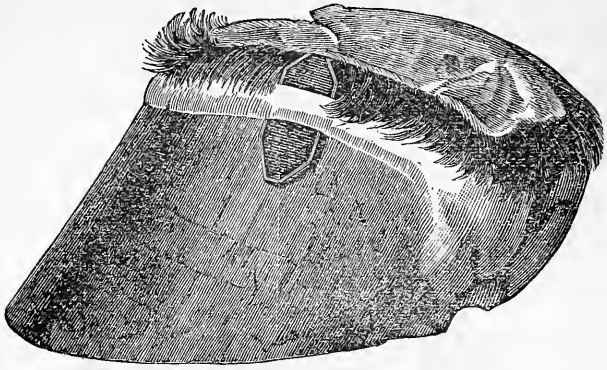

FIG. 434.—Showing the frog-band, or coronary ring.

in the severest manner, without shoes, on the plains, and horses that are worked in sections of country where the attrition is not so great as to require shoes, such as Southern Michigan, Illinois, Iowa, and other parts of the South and West, retain a remarkably sound, healthy, natural condition.*

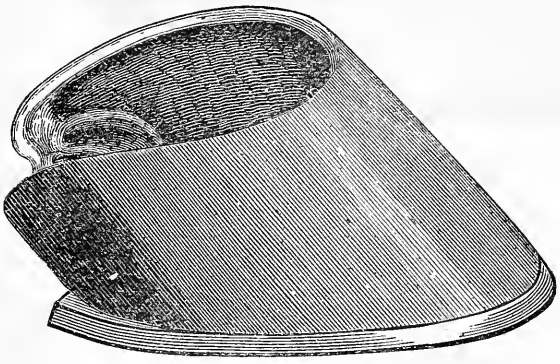

FIG. 435.—Model of hoof and shoe, made by writer in 1860.

* It is claimed, and not without reason, that the feet of colts are not always in a natural, healthy condition; that they are liable to grow out of shape, thus destroying their natural adjustment and health, and that it is often necessary to obviate this by trimming the hoof and properly adjusting a shoe. This tendency is sometimes induced by hereditary causes, resulting from bad shoeing, or from bad treatment in preventing such healthful freedom and attrition to the feet as would keep the horn worn down. The writer's attention was especially called to this point when in New York, in 1872, by the invitation of Dr. Bryden, a well-known expert in the art of shoeing, to accompany him to witness his treatment of a colt's feet which required treatment on account of undue confinement, and hereditary tendencies to contraction.

We observe also that the excessive wear is always at the toe, and that the heels rarely suffer even on bad roads. Consequently the best shoeing for the feet, for all roads and seasons, when in a good condition of health, must be such as will permit them to be as nearly barefoot as possible, or at least that the posterior part is so, yet sustaining all the attrition of wear to which they may be subjected. This being true, the object, then, of shoeing should be to prevent excessive wear, give power, and prevent slipping, which necessitates the following conditions: First, the preparation

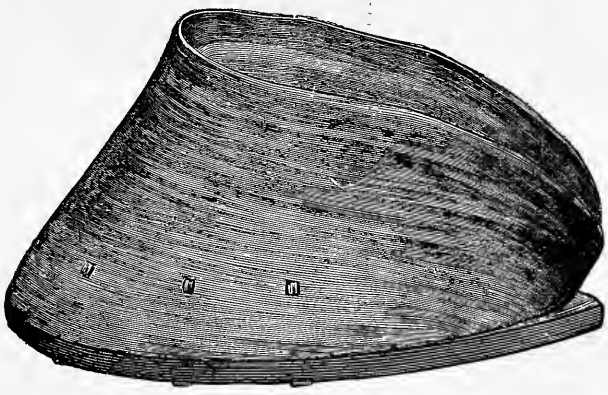

FIG. 436.—Side view of a properly proportioned shoe.

of the foot; second, the weight, form, and fitting of the shoe; and third, nailing to the foot.

First, in preparing the foot for the shoe, the aim should be to cut away so much of the wall as would be a surplus of growth, or so much only as would bring it back to its natural form and adjustment.

Second, the shoe should be in form, so that when on, the adjustment of the foot, or its power to obtain hold or grasp upon the ground, will be as nearly as possible what it was before being shod, and yet sustain the wear for the time it is intended to be on.

Third, it should be nailed on firmly, yet so as to break or weaken the wall of the hoof as little as possible, and not interfere with the freedom of the quarters, or enlargement of the foot as it grows.

Pedestrians who are compelled to study carefully the fitting

and adjustment of shoes, are particular to have them big and easy, yet support the foot perfectly in all its parts without altering its natural adjustment. The shoe must exert *no undue pressure* upon any part, nor be so stiff as to interfere in the least with the natural mobility of the foot. Even a chance knot or seam in the stocking would be fatal to these conditions; because when under great strain it would cause chafing, which, if not arrested, would set up so much inflammation as to soon induce entire disability.

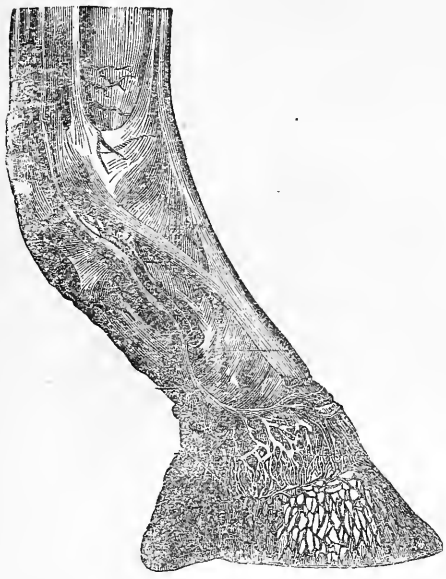

FIG. 437.—View of foot from which the hoof and skin have been removed, showing circulation through the arteries and veins.

Now in shoeing horses, we see that the hoof is a shoe of another kind, which is the exact counterpart of the internal parts, and is perfectly adapted for the protection and support of this internal structure. If its mobility is impaired, or any part of the foot is subjected to excessive pressure or injury sufficient to cause inflammation, the same effect must follow of producing inflammation and alteration of structure, not only of the foot, but of the entire limb, which would soon ruin a good horse.

In the state of nature, the bones of the foot are so nicely adjusted and balanced by the ligaments and tendons of the limb, that there is no unequal strain brought upon any joint, but each assists in supporting the others. But if the heels are raised too high, there will be correspondingly increased strain brought upon the ligaments supporting the back or front part. In like manner, raising or lowering the inner or outer quarter, would produce a lateral strain upon the joints and ligaments which must ultimately cause serious injury, and cause the foot to grow out of line.

The strain comes perpendicularly from the shoulder to the fetlock, and thence to the ground as it passes along to the pastern and foot. These are inclined more or less obliquely forward; consequently, the strain or weight imposed upon the limb has a constant tendency to be increased by the length of the foot and its obliquity. To prevent this, there are two strong tendons, perforatus and perforans (see cuts 369, 370), which support the ankle and maintain its natural angle.

Fig. 438.—View of foot from which the hoof was removed by maceration.

It is evident that the longer and less upright the lever, the greater must be the strain upon these back tendons. If the degree of obliquity is made greater than is intended by nature (which is caused by allowing the toe and foot to grow unnaturally long), this result will follow. To prevent this, at stated intervals the shoe must be taken off, and the foot cut down to its natural size and adjustment. On the other hand, if the toe is made too short and the heel is raised, the front or flexor tendons will be subjected to increased strain, and equally liable to produce serious harm.

A popular writer says: "A shortened point of hoof, with or without wrong interference of the heels, alters the degree of obliquity of the whole limb, and diminishes the power and possible rate of speed of an animal, from the instant such a state of things is begun. One of the first signs of this occurrence in a young horse of high cast, is a *swelling of the back sinews below the knees*, and it is that enlargement which attracts attention, and not the foot." I give here a variety of illustrations showing the different degrees of obliquity, and length from the fetlock to the toe. Fig.

447 shows a good adjustment. Fig. 445 shows the toe too long. Fig. 446 shows the toe too short, with fetlock too straight.

FIG. 439.—Too short and upright.

FIG. 440.—Too oblique.

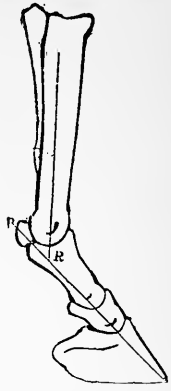

FIG. 441.—Natural obliquity of ankle.

If the heels on a pair of boots are too high, there will not only be unnatural strain brought upon the calf of the leg and ankle

FIG. 442.

FIG. 443.

FIG. 444.

Different modifications of obliquity and length.

while walking, which in a short time produces weariness and pain, but a sliding or crowding of the foot forward against the toe and upper. This condition in a short time would cause a shoulder

to form against the foot, and become a cause of soreness and inflammation. On the other hand, should the sole be excessively long and stiff, there will be correspondingly increased strain brought upon the ankle and great tendon at the heel, causing fatigue and injury. Again, if the heel is too narrow or drawn in too much on one side, the surface of resistance being thereby lessened, it wears down more rapidly and runs over.

Fig. 445.—Toe too long.

To remedy this, it is necessary to make the adjustment of the shoe to conform to the line of bearing of the foot; that is, low heels, with broad, elastic sole, an increase of the bearing surface of that side, and, if necessary, a drawing in or narrowing of the opposite side sufficient to equalize the line of bearing. The principle is the same in restoring or preserving the adjustment of the horse's foot; consequently properly cutting away and leveling the foot, and adjusting the shoe to it so that the bearing surface will be exactly the same from the center outward on each side, and of the right length, requires considerable skill and judgment.

Fig. 446.—Toe too short.

Again, the foot is continually growing wider and longer, so that after being shod, propor-

tionate to the amount of growth or length of time the shoe is on there will be corresponding change from the original size and adjustment, making the shoe too small, or drawing it forward under the heels, and, as before explained, increasing the strain upon the back tendon. To restore this to its natural adjustment, at stated intervals of four or six weeks, according to the rapidity of growth, the shoe must be taken off and the wall of the foot cut down to its original form, and the shoe nailed on again.

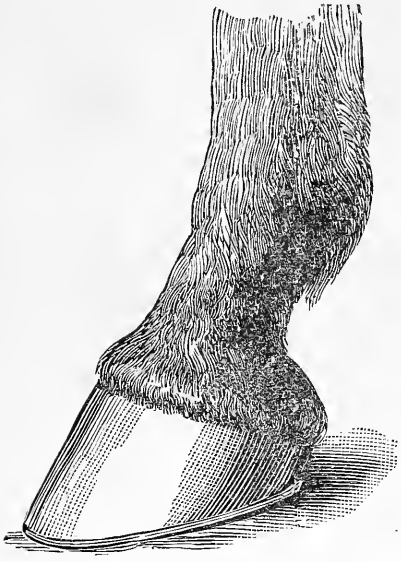

FIG. 447.—Foot about as it should be.

In its natural condition the outer rim or wall of the foot comes in contact with the ground first; second, the frog and outer edge of the sole; third, the center of the foot and spaces between the bars and frog. Now, in putting on the shoes, the aim should be to keep the adjustment of the feet as nearly as possible what it was before shoes were put on. To show this more clearly, three sectional drawings are made, showing the concavity of the foot at different points between the heel and turn of the hoof, and the necessarily great disturbance of this relation by the form of shoe usually put on. Cut A shows the foot at the point of the heels as it rests upon the ordinary thick shoe, with calks raising the frog and sole so unnaturally high from the ground, that there can be no contact of those parts with it necessary for obtaining moisture and preserving a condition of health. In addition it will be noticed, that in the way shoes are usually fitted, the bearing surface is very much concave, tending to force the quarters together. Cut B shows the same, with form and fitting of shoes as they should be; cuts C and D show the same at relative distances between there and the turn of the foot; D, at the widest part, representing a heavy shoe.

The better to explain some of the causes of contraction and

alteration of the structure of the foot by shoeing, the writer intended to give a cut of the impression of a natural, unshod foot upon the ground, showing that the outer rim or wall comes first, and that when the ground is so soft as to let the foot settle into it, there is a correspondingly strong pressure upward and outward upon the quarters. To do this, when in New York City making illustrations for this work, he made three trips to Flatbush, to obtain casts from colts' feet from four to five years old, from which to make the desired drawings. After the loss of a week's time, and large expense, two drawings of such impressions were made by two of the best artists in the city. But it was finally decided that neither could be engraved so as to bring out the idea sufficiently clear and good to be of any special benefit; consequently it was abandoned. The sectional drawings given are made from a half-size scale of casts, showing the exact degree of concavity at different parts, as given.

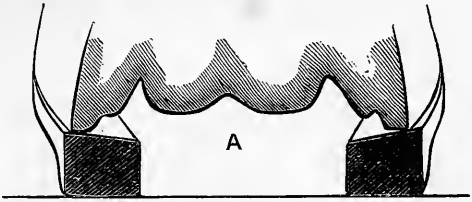

FIG. 448.—Foot at point of heel on thick shoes.

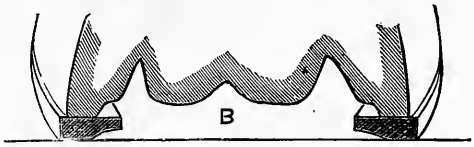

FIG. 449.—Shoe fitted as it should be.

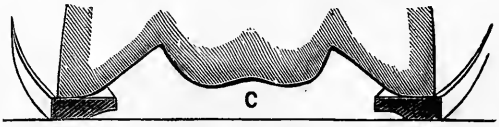

FIG. 450.—Adjustment between heel and turn of foot.

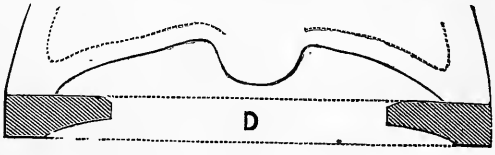

FIG. 451.—Adjustment at turn of foot.

FIG. 452.—An exact drawing from a colt's foot, one-half size, showing the natural concavity of the sole.

The colt's foot in its natural state, being the most simple and

easy to prepare for the shoe, we will consider first. For colts requiring to be driven around in harness, tips or thin plates only would be sufficient. In such a case, simply trim off the wall in front down to a level with the sole, and adjust to, and nail on with about four small nails, a small thin strip of steel or iron a little broader than the thickness of the wall. Steel would be best, because it admits of being made lighter, and wears longer. The heels and frog should not be interfered with unless one heel is much higher than the other, when it should be lowered sufficiently to restore the proper adjustment. The objection to tips is that, as the toe is growing, the heels are wearing, which in time would be likely to increase the strain upon the flexor tendon and its appendages. This disproportion of wear would be more rapid and noticeable should the roads be wet and gravelly, as moisture and grit soften the horn and cause it to break and wear away more rapidly, but not so much as may be supposed on paved streets and mud roads. The writer saw several horses in New York City that had been shod with tips with decided benefit to the health of the feet and without any apparent disproportion or wearing down of the frog and quarters, though the iron was worn down fully a quarter of an inch. The parts became, as it were, hardened and polished, thereby resisting the wear almost as much as the iron. If the colt or horse is used but moderately, and the roads not very stony, tips, if properly fitted and put on, will be found of decided advantage. They are necessary in cases where there is a lack of nutrition, and an unhealthy and slow growth of horn usually following laminitis.

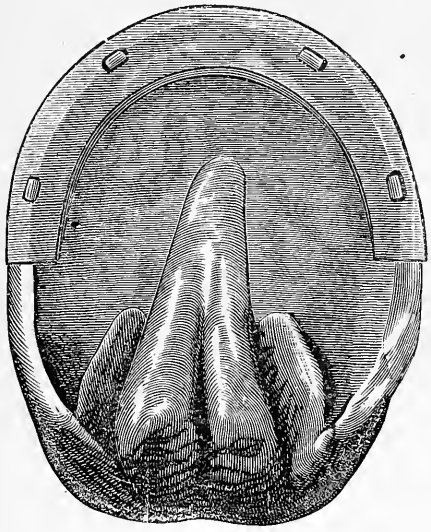

FIG. 453.—Tip about as it should be adjusted.

As there has been much discussion among writers in relation

to the use of tips, or thin-heeled shoes, and desiring to make this explanation as clear and reliable as possible, I requested Dr. Hamill and Dr. McLellan, the two best veterinary authorities on this subject in this country, to give me a statement of the cases for which, in their judgment, tips would or would not be adapted. I give herewith the reply of each, and invite the attention of the reader to the points made, and the reasons given therefor. Prof. Hamill says:—

"In shoeing the horse's foot, the question of frog pressure is a debatable one, owing principally to a universal but mistaken belief in uniformity in horses' feet. Every innovation in shoeing for the past hundred years has been wrecked on this point,—*uniformity*. No two horses' feet are alike; no two feet of the same horse are alike. This may sound strange to most people, but it is a fact, that they are no more alike than human faces are alike. And why should the (so-called) students of the foot insist on treating all horses' feet in the same manner, and with the same shoe?

"Now while I am a firm advocate of frog and sole pressure, and have driven my own horses for years over the pavements of New York City, with nothing on the feet but what is known as the English tip or toe-piece shoe, which gives the foot the entire freedom of all its natural movements, yet I must say it would be absurd to attempt to shoe every horse in this way. There are any number of cases where this system would be *injurious* to the foot and even to the limb. But as the foot, or rather that part of it inclosed within the hoof, is the object oftenest under consideration, I shall explain briefly how it may suffer from extreme frog pressure. (One point which we should always keep in view is a due proportion, or equal distribution of the weight in all parts of the hoof, and by no other system can the foot be healthy.)

"Any foot that is thin in its general structure, but more so in its vertical position, or from top to bottom, and with the frog full at its pyramidal eminence or body, is not a proper foot for frog pressure. In such feet the plantar cushion, or what is known as the fibrous or fatty frog, is very thin, is easily made weaker by absorption through extreme pressure or irritation on the horny frog, and therefore offers very little protection to the great flexor tendon where is passes under the navicular bone.

"But I may be asked, How could this in any way cause injury, if the navicular joint be perfect, as the tendon requires only a slight cushion underneath? My answer is, that there is a *double* impingement of the tendon, owing to the navicular bone descending on the tendon every time weight is thrown on the limb, the proof of which is the pain caused by this action on the internal structures of the hoof. I ask, Where is the SHOEING-SMITH who has not seen the agony of a horse while standing on one bare foot on the level floor while the other foot is being shod, and the relief which followed

when the shod foot was placed on the floor? I may be told that such feet have been previously weakened by bad shoeing and bad care, and that a horse which never had been shod would not suffer in this way. Those who make such assertions are entirely ignorant of the anatomy and physiology of the foot.

"My answer is, that when a horse first comes to the world he has *no* frog development, and for the first year of his life, while walking on a level, can have *no* frog-pressure. It is only animals that are raised on low or marshy land that have a great development of frog. Horses belonging to mountainous countries have very little frog, and generally narrow or apparently contracted feet, which is no evidence of disease. Witness the ass and the mule for example; and I may add that although wide heels are generally desirable, they are no evidence in themselves of perfect health. I am well aware that most thin heels, and generally thin feet, have a large frog, but the depth of such a frog is more apparent than real, as it will be found on close investigation that the flexor tendon and navicular structure are lower or nearer the ground-surface in such a foot. Therefore we must discriminate in all cases, as one mistake may cause irreparable injury. To be definite, we can safely give extra frog and heel pressure in all cases where the hoof is deep at the quarters, where there is a tendency toward contraction and atrophy of the frog, where the obliquity of the pastern is not too great, *and where the feet and limbs are perfectly sound and well proportioned.*

"(This latter will narrow the circle more than most people are aware of.) No thoughtful man would dare to throw extra weight on the sole and frog of a foot that had long suffered with navicular disease, however excellent this would be as a preventive. Neither should we throw extra weight on the posterior parts of a foot or limb where there is any soreness of flexor muscles or tendons, or any ligament involved, as it would entail greater tension on the parts, while the opposite is what is required, viz., flexion or relaxation.

"I say distinctly, we should only carry frog pressure to the extent of bringing into activity all the elastic structures of the foot, which increases the circulation of those parts so liable to atrophy, *and only through the circulation* can we keep up or restore the health, vigor, and growth of frog, sole, heels, and quarters of the horse's foot."

Prof. McLellan says:—

"In reference to the use of tips, I give you only an outline. They are useful in the case of corns, in quarter-cracks, in thrush, in interfering, and in fitting the horse to run at grass. They are not applicable to feet that have thin, flat soles, with low heels. They are not applicable to heavy work horses with flat feet and prominent frogs (such frogs are liable to suffer bruises when so exposed, the resulting inflammation extending frequently to deeper

and more vital structures). They are not applicable to feet having navicular disease. They are not applicable when, in applying them, it is necessary to disturb the normal relation of the bones of the limb. They will be found particularly useful in strong feet that have corns in both heels, and in the case of bad interferers."

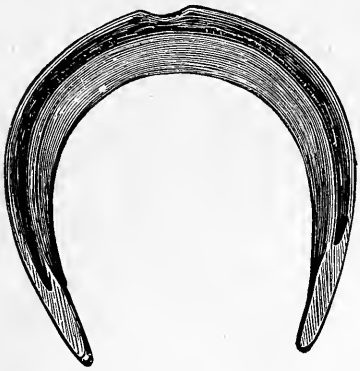

FIG. 454.—Inferior (lower side) concave surface of shoe.

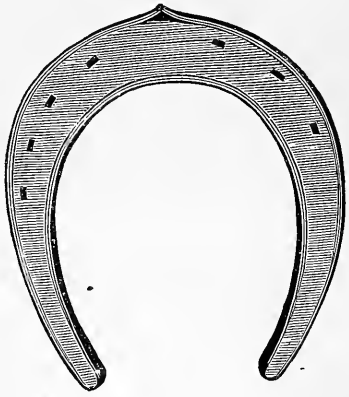

FIG. 455.—Superior (upper side) surface of shoe, bearing on the sole.

I give here illustrations of the form of shoe and method of preparing the foot advised by Prof. Williams of the Edinboro College. The shoe is concave on the ground surface, flat on the bearing surface, and drawn back to the thickness of the wall at the heels.

"The calkins and toe pieces should be done away with for all kinds of horses except those used for heavy draft in towns where the streets are paved and steep. It is urged that all horses required to go beyond a walking pace are injured by shoes with turned up heels and toes. Farm horses and those employed on macadamized roads are better without than with toe pieces, although the pace at which they are required to go is never faster than a walk. In fact, all horses, when possible, should be shod with a flat shoe. The

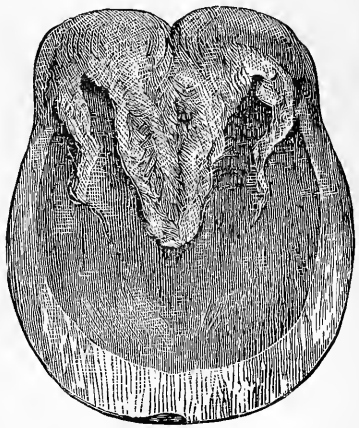

FIG. 456.—The foot prepared for the shoe. The sole, frog, and bars untouched with the knife for two years; the natural length of toe and depth of wall kept in their relative positions by the rasp only.

form of the shoe, as shown by the illustration, ought to be so made and fitted as to bear upon all parts of the sole and crust that are calculated to bear pressure—the sole around the margin of the crust for a distance of about half an inch in all parts of the foot except at the heels; *i. e.*, that part of it embraced in the triangle between the wall and bar. Here the shoe should rest upon the wall, only being made sufficiently narrow at this part."

See statements from Lafosse and others at the close of the chapter.

Trimming.

Before preparing the foot for the shoe, the smith should go in front and look at it, so as to determine better its adjustment.

Fig 457.

Fig. 458.

Good form of thin-heeled shoes, from models presented by Mr. Goodenough, of New York.

Sometimes the foot may be run over by having one side too high or the toe worn off excessively. If it is desired to be particular, he should see how the feet are carried in a sharp trot; whether too high or too low; or whether he travels too close, endangering interfering or cutting—using the words of a high authority, "to see whether there are any traces of brushing or cutting on the inner sides of hoofs, fetlocks, or knees." The foot can then be taken up, when a look from the heel forward will enable an experienced shoer to determine how much and what part is to be cut

away to level it to the proper proportion, and the faults, if any, that can be modified or corrected. If the horse travels high, the shoes must be light; if low and subject to stumbling, they may be increased in weight a little, and the toe somewhat rounded; if liable to strike, then set close under the wall with edges filed smooth.

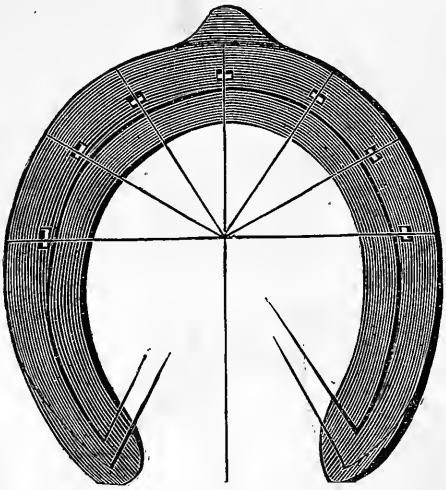

Fig. 459.—Location of nail-holes in an ordinary flat shoe.

It is not the business of the writer to say what instruments should be used for doing this, the buttress, drawing-knife, or rasp, or each alternately; the point is to cut away or remove the surplus growth in the easiest and best manner, which depends more upon the deftness and ingenuity of the man than upon the use of any special means. The buttress, in the hands of a man who knows how to use it, cannot reasonably be objected to, next to which a good sharp rasp is advisable. The wall should be reduced to nearly or quite on a level with the outer margin of the sole, providing the sole has not been cut away too much. As a rule, the less taken away from the foot the better, except for special reasons, which will be explained hereafter. The bearing surface of the entire wall should be made level, so that an even bearing surface of the shoe will rest upon it fully. The rasp should now be passed around the toe, to

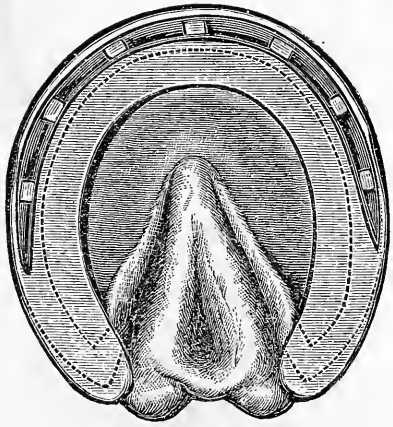

Fig. 460.—An ordinary flat shoe nailed on.

cut away the sharp edges and bring it to the size required. Practically, this should be little more than rounding off the sharp edges of horn to prevent splitting.

The principle is the same of leveling and preparing the feet of horses that have previously been shod. In such cases, to take off the shoe the best method is, after the clenches are cut off, to raise both heels slightly with the pincers, then pry forward and across the foot a little, when the nails can be pulled out one by one. It is seriously objectionable, as generally done, to pull off the shoe by force, as the severe wrenching endangers tearing the hoof and straining and injuring the foot. This would be especially objectionable if the hoof be thin and the horse sensitive. Next, any stubs or nails should be removed.

FIG. 461.—Mobility entirely destroyed in right foot.

While it is simply intended to pare down the wall to its natural form, if it is thin and weak, growing but little, especially at the heels, where there is great difficulty to grow sufficient wall for the support of the foot, no more should be removed than is barely necessary to level it. There should be no interference with sole or frog, excepting to chip or cut away the portion of the old horn which could not be exfoliated. Frequently the heels are too high, or the toe too long; in either case, whatever the excessive accumulation or growth of horn, it should be cut away until the foot is brought back to its natural form and adjustment. Sometimes there is excessive accumulation to the amount of half an inch or more at the heels, or even of the whole wall of strong, upright feet, yet to the ordinary observing shoeing-smith it may not appear excessive, because cutting away so much would make the foot appear to him to be unnaturally small. Several specimens of abnormal growth of feet are given. (Figs. 463, 464 are taken from life.) Fig. 461, which was seen by the writer at Fulton

Ferry, is that of a pony mare driven before a huckster's wagon. The right foot was so contracted by this excessive accumulation of horn, that its mobility was entirely destroyed. It will be noticed that the toe of the shoe is carried forward something like a sled crook, to enable a rolling motion upon the ground. It was pitiable to witness the pain and misery this poor animal exhibited. She walked with a crippled, sensitive motion, and while standing would put out one foot, then the other, but mostly the right one. The case could have been easily relieved of pain and soreness, by simply cutting down the feet, and thoroughly soaking and opening the quarters, as explained in treatment for "Contraction." In Fig. 463 the dotted lines represent the point to which the horn should be cut away, showing an excess of accumulation of over three inches.

FIG. 462.—Showing extreme degree to which the internal structure has been compressed and forced upward out of the hoof.

FIG. 463.—View of right foot enlarged. Dotted lines showing point to which the horn should have been cut away.

FIG. 464.—Outside view of hoof.

Figs. 464 and 465 were taken from a specimen belonging to the Columbia Veterinary College, of New York, loaned to the writer by Prof. Walton, the House Surgeon, to make a drawing from. The Professor told the writer that the horse when living was compelled to walk on the heels, a complete cripple, on account of the extreme length of the toes. The original size was estimated to be about where the outline runs, the alteration being the result of contraction while drying. The exact proportion of the original is

maintained in all its parts. A reversed view of the same is shown by cut 465. The dotted lines show the point to which the hoof should be shortened, and the relation of the internal parts to the wall and sole. The illustrations heretofore given of the hoof and internal parts will give a good idea of the parts generally, and how much should be removed. But shoers wishing to study the subject more thoroughly, can easily do so by procuring a dead foot and letting it remain in water until the parts can be separated; or burying it in stable dung for a short time, when the hoof can be easily taken off, showing its exact thickness, and the

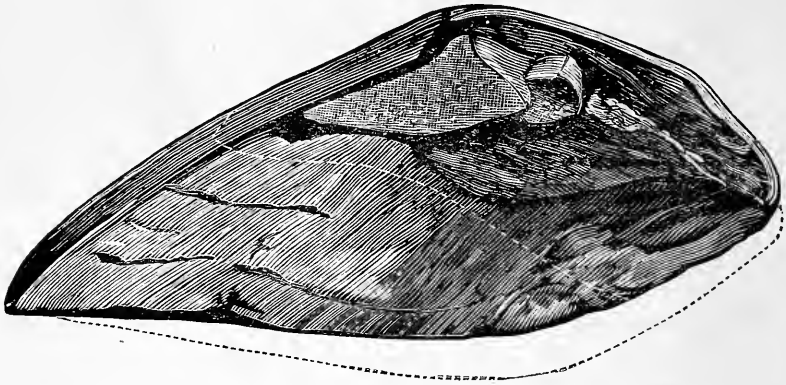

FIG. 465.—Reversed view of Fig. 464. Half size. Degree to which the bones are crowded up out of the foot.

relation it has to the parts within. In any case of paring the foot, the principle should be to reduce it from its deformity, whatever it is, to its natural proportion and adjustment. If the frog is hard and bony, it should be cut down so as to come within the lower edge of the shoe; for in such a case it would be like any other hard, unyielding body under the heel. But usually the frog is small, and seldom requires any attention.

The authorities most common on "Shoeing" are explicit in directing that the sole should be well pared out—made, in fact, so thin that it will spring to the pressure of the thumb. This is so injurious that I regard it necessary, though subjecting me to considerable expense and trouble, to give at the conclusion of the chapter such proofs as would convince of this, and would ask for a careful reading of them.

When a chip of horn cut from the foot falls to the floor, the moisture being absorbed from the upper surface quickest by its

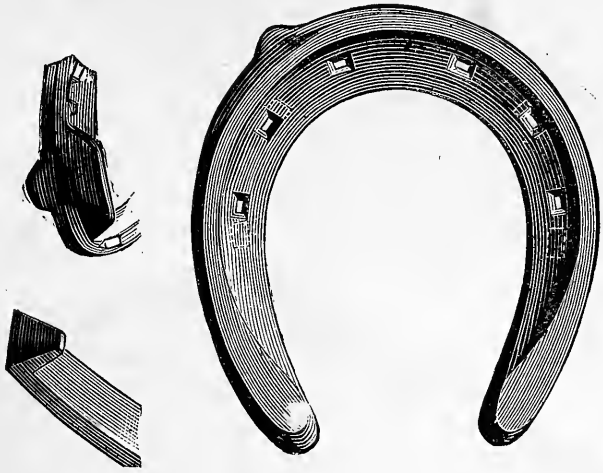

Fig. 466.—Good model of a concave road-shoe, adapted for summer or winter.

greater exposure to the air, causes it to curl upward, the same as a thin board or shingle will warp when exposed to the heat of the sun. Now, when the sole is trimmed out, as explained, the exposure of its denuded surface to the dry air causes it to lose its moisture rapidly, contract and bend upward against the soft parts, making the sole more hollow. But paring out the sole so excessively that it will yield to slight pressure, will allow the horse to travel better for the present, and it is quite natural for one to believe it so great a benefit, that at each time of shoeing it is repeated, regardless of the fact that the feet will be brought ultimately into a con-

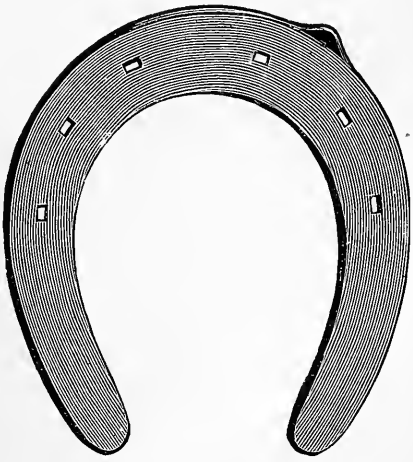

Fig. 467.—Bearing surface of the same.

dition to require a continual paring away, and the horse is hopelessly ruined. Wealthy men in England, who are in the habit of riding much, finding that a horse will ride easier by having the soles pared out thin, require to have it done, not caring if it does spoil the horse in a short time, as they are able to buy others.

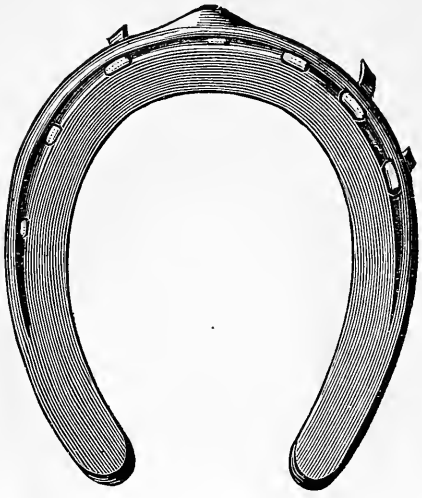

Fig. 468.—Good model of road-shoe.

While in conversation on this subject with Dr. Hamill, before referred to, I asked the question: "Doctor, what do you think of thinning out the sole as usually practiced?" His answer was: "It is death to the foot, because the foot in consequence loses its moisture so rapidly that it becomes a direct cause of contraction through the absorption which takes place. This, acting on the nutrition of the part, may cause various changes, etc. Yet there are occasions when extreme paring may be resorted to with some advantage." In explanation he related the following incident: Some years ago when John H. Cook, the celebrated equestrian, came from Paris to perform at the New York Circus, his horses were considerably the worse for the long passage and close confinement. Two of them, both splendid animals, had their

Fig. 469.—Bearing surface of the same.

feet trimmed and shoes reset to enter on rehearsal the next day after landing, but they were very stiff and sore, apparently foundered. As no other horses could be put to this special act, Cook despaired of making a creditable, first-class performance. As there was no time for the usual treatment of such cases, he consulted the boss hostler, and together they acquainted Dr. Hamill of the difficulty. Hamill promised, if they would allow him his own way, to relieve the horses immediately, which he did by cutting away almost the entire sole of the front feet, relieving the quarter, in fact, cutting the foot until it was elastic or yielding in all its inferior and posterior parts. This was death to the foot, as he told Cook. The soles were protected by leather and tar-dressing until recovery took place. Although this was an extreme mode of treatment, Mr. Cook was well pleased at the result. I asked him if he could not counteract this effect of paring by keeping the feet wet. He said: "Yes, to a certain extent; that was what he did where it was possible."

FIG. 470.—Model of shoe for express horses, from Prof. Hamill's collection in New York.

In 1869 the Humane Society of Edinburgh, Scotland, offered a series of prizes for the best essays on "Shoeing," having in consideration the comfort and soundness of the horse. About forty essays were sent in for competition. The Vice-President, Mr. H. S. A. L. Hay, says: "It is gratifying to find so general a concurrence among the writers in their utter condemnation of the common but unscientific and irrational practice of paring away the sole and frog as a necessary preparation for shoeing"

For the special benefit of shoers, I think it advisable to include here Prof. Gamgee's instructions on paring:—*

* "Horse-Shoeing and Lameness," London, 1874, by Joseph Gamgee, Vet. Sur., Lecturer on the Principles and Practice of Farriery in the new Veterinary College of Edinburgh.

"There is scarcely a horse that comes under our hand to shoe that does not require some portion of the hoof to be removed, even though it may be so excessively weakened by mismanagement as to require several months' conservation before due quantity and proportion can be produced. Bad management and disproportion of hoof go together, and though the latter may be slight, it requires attention and adjustment; all the horn we may remove with a file (not a coarse rasp) will, in some cases, amount to no more than would cover the surface of a shilling, yet the bearing surface of the foot is thereby both increased and greatly improved. It is just, in these cases, when with equal mastery a shoe is selected and fitted out, so that the surface of both foot and shoe are counterparts of each other, and the latter is nailed to its place with all possible care, that the animal which reached the shoeing forge in torture and unable to walk, leaves it with freedom of action and a cheerful countenance.

"If I be asked, From what part would any hoof require to be removed in various degrees in those cases vulgarly termed *stumped up cases?* I reply that it is impossible to state this here, and nothing but an apprenticeship at shoeing, or some such equivalent, can make a man reliable for putting into execution details of the kind, where rule helps so little; but generally, if not exclusively, the wall is the part requiring adaptation of surface; at the toe it may be projecting, and the edge require the file to be passed transversely across it; or, the toe being too short, the columns of the heels on either side may be lowered slightly, by holding the foot in the left hand and passing the flat part of the file over the bearing surface from behind forward in one, say outside, extremity of near fore, and backward over the inner heel, taking care that both heels are level; the off foot, by reversing the action of the hand, is treated in the same way.

"But many men will say, Why not take the horse's foot between the legs, as is the custom? Because, where so very little has to be done, I want to see how to do it, and I don't require the greater purchase which the firm hold of the foot between my knees gives. I am only stating, however, what I do, and how I do it. In the hind feet we see and can manage best by taking the foot in the ordinary way. . . . . I then take each foot forward upon my knee, and, having seen exactly how much hoof is required to be removed, and from what parts I take the rasp, and with either the rough or file surface, according to the quantity of hoof to be removed, I pass it vertically, so as to take off the outer edge to the extent required; then placing the foot between my legs, remove the exfoliated sole, and, detaching parts of the frog, the first by means of the buffer, raising the loose flakes of horn from the front backward by tapping the tool with the hammer, the superfluous exfoliations of the frog are then removed with the drawing knife, not by paring it at all, or much cutting, but more by raising the flakes with the left thumb and finger, and detaching them with the knife. This done, the bearing surface of the wall is to be adapted, and, holding the foot in the ordinary way, fore or hind, the rasp is passed over the point of the wall to reduce it to its proper depth. . . .

"If the instructions just given be intelligently carried out, the

quarters—the surface across the bottom of the foot—will be fairly provided for from the extreme ends to the middle, which is commonly left flat or hollow and weak; the shoer will be assisted in avoiding this defect by acquiring the habit of glancing down the foot, from heel to toe on each side in parallel lines; his eye will then be able to judge whether he has secured the object on which I am laying stress—a fullness in the surface across the center of the foot. The center of the foot is the region of the greatest breadth and depth of its arch; on the preservation of its breadth and depth depend the strength of the arch and of the foot itself, and the firmness, safety, and power of the horse's action.

"The third class of feet are those in which, by mismanagement, a morbid accumulation of hoof places them out of form. Some of these are not in this state because they have not been shod at regular intervals, but because those who shod them have not known their art—how to reduce the abundance of horn to due proportion in different parts of the hoof. . . .

"There is a common saying, that in shoeing, 'the shoe should be made to fit the foot, and not the foot to fit the shoe.' This hackneyed expression, when closely examined, amounts to nonsense. The horse-shoer, if he be an artist worthy of the art, is required to know the foot so that he can with the greatest possible exactness and extent, economize its want of substance and energy; he must, like the sculptor with his clay or marble, bring out the true figure from a mass of deformity. That the over-reduced and weak hoofs are the most numerous, is granted; but I have seen numerous bad cases of deformity and lameness due to the excess of horn in the wrong places. . . .

"One difference between the English mode of shoeing and that adopted in all other countries in the world is, that we hold up the horse's foot to work at it. I only incidentally allude to the fact, because the origin of our custom is as much hidden by antiquity as the more extended mode. It is that of holding the horse's foot and working at it, to which I allude, while the continental farrier has the foot held while he shoes it. This last is the chief difference which attacts the attention of travelers. In using the buttress, the rasp is superseded as well as the drawing knife; the latter altogether, and the former, a small, fine rasp, employed only to smooth off the surface of the lower wall, as the last act in the process. Together with the buttress, the continental shoer uses a tool analagous to that which we formerly employed under the name of *toeing-knife;* but a modern continental shoer, if a good workman, uses this, which in wrong hands would be very destructive, with admirable effect. This foot-rounder—the literal translation of the name of the instrument—is a straight steel blade, of about nine inches in length by one and a half in breadth, and moderately sharp, by means of which the hard margin of the wall of the hoof is cut off by light taps of the hammer, while the instrument is held so as to regulate the quantity to be detached.

"The plan which I have given, which I adopt with the rasp, of taking the foot forward, was founded upon this method; but when we come to those hoofs where overgrowth and disproportion to an indefinite

extent prevail, I find that no amount of skill in the application can bring the rasp and drawing-knife, with the rest of our tools, up to the *round pied* and buttress of the continental shoer. To produce the same effect, we, with equal knowledge of the requirement, take much longer time and devote more labor to the work; while in ordinary practice, with us, the work is liable to remain undone or be badly done, as a rule, it is fairly accomplished on the continent. Take a foot grown to one or two inches beyond its normal depth and length, curled over at both heels upon itself, the bottom of the column being in an almost transverse line with the center of the foot, and a morbid thickness of sole and frog imprisoned and bound immovably together—such a foot puzzles a workman; with such a weapon as the rasp and knife, he does not know how to begin or proceed with a view to its proper reduction.*

"In such a case the foreigner lays his foot-rounder transversely, with the edge toward one heel or column, about one-fourth of an inch from its lower surface, and with two or three taps with the hammer, cuts transversely forward from one to two inches; the same thing is done with the other column, and then usually, but not always, a greater depth is rounded off the toe, and a little, if there be abundance, at the sides; all of which can be effected in the space of a minute or two; the man then takes the buttress, and in the foreign mode of holding the foot, cuts from toe to heel, and when the hard edge of the wall, and some of its depth has been removed, that which remains is pared down to give the required surface.

"One advantage, at this point of the operation, I find favorable in the continental practice, is that when there are morbid accumulations of sole, which come in the way, and are as much foreign and incompatible with its functions as a snowball at the bottom of the foot, they are met and easily broken up by the direction in which the buttress is pushed; whereas, by holding the foot ourselves, and working more from heel to toe, our instrument slips over the exfoliations of horn which have their fixed basis behind, and rise in front as they become ripe for being cast off.

"Having learned these conditions by experience, acquired late, and working according to what I was taught in the course of apprenticeship, I fairly met the inconvenience by making use of the buffer for breaking up the loose, imprisoned sole and exfoliations of the frog; these parts would detach spontaneously after the wall was reduced to its normal proportion, and the local condition would not ensue but for the general state and want of motion of the foot; such motion implies health and freedom, in the enjoyment of which sole and frog cast off their flakes and maintain their proper substance. It might appear that this disengaged horn, if left unheeded, would fall with time—a plausible theory, but incompatible with good practice. Such incumbrance must be got

* Many intelligent smiths in various parts of this country visited by the writer, are in the habit of using the toeing-knife and buttress. If the growth is excessive, the wall is chipped off as described, and then reduced by the buttress by cutting from the heel forward.

rid of, not only before the shoe is put on, but before the proper surface can be adapted for it."

The shoe should, in form and size, little more than cover the wall, excepting at the heels, where it should be so much wider and longer as to compensate for the growth of the foot, and be heavy enough to sustain the attrition, or wear, for the time it is expected to be on. But should this require an excessive thickness, then the bar may be made wider, to permit more wearing surface. It should fit closely all the way around to the bearing surface prepared for its reception, so that it may give to the crust all the support it can receive, and carry out in its ground surface, as nearly as possible, the form of the wall before it was cut away.

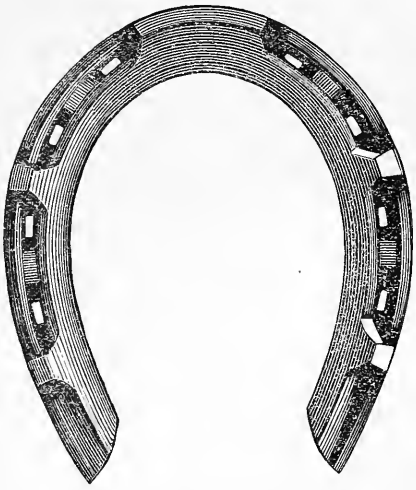

FIG. 471.—Ground surface of the Goodenough shoe.

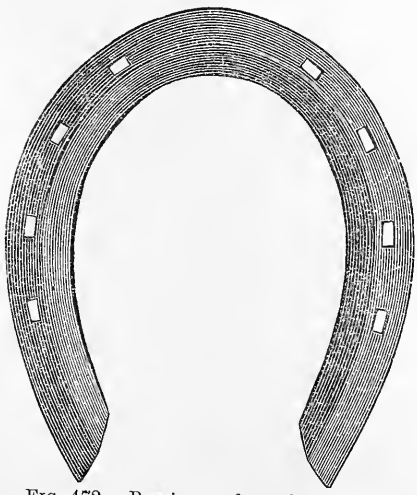

FIG. 472.—Bearing surface of the same.

It is a rule, recognized by the best authorities, that the sole should not rest upon the shoe, except around the toe where the outer edge is left full and natural. But if the wall is cut down close, and the sole rather thin (which, as explained before, in no case should be done except for special pathological reasons), it is advisable, if it comes too near the iron, to lower the part coming under it. As a rule, the bearing surface should be level, and the ground surface concave, or the inner edge of the

ground surface so bevelled off that it will not harbor stones and dirt, and be so stiff that it will not bend.

If the horse is expected to be driven only occasionally, as for family use, and upon common dirt roads, the wear will be but little, and the shoes should be correspondingly light; but if much travel is required on stony or macadamized roads, the weight should be sufficient to sustain such wear. The addition of a small bit of steel, hammered well into the toe, and tempered, would add

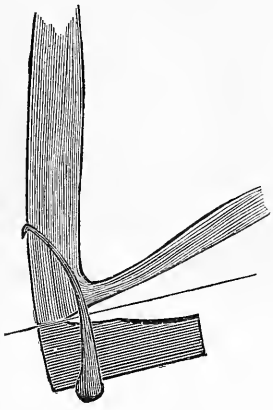

FIG. 473.—Badly fitted. Foot trimmed too much. Outer edge of wall only, resting upon the shoe, which is made concave.

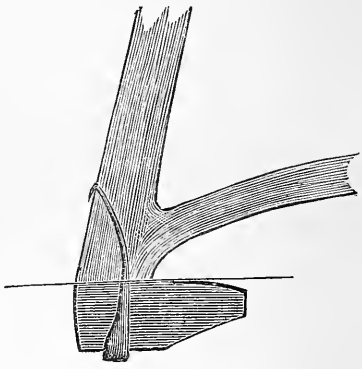

FIG. 474.—The same not cut away enough. The shoe, though properly fitted, is too thick.

greatly to its durability. It would be much better to make them wholly of steel, as they would be very much lighter, equally stiff, and less liable to bend. An objection to steel is, especially in cities where there are paved streets, that there will be more tendency to slip, than by the use of shoes made of iron. (See cuts for light-driving shoes.)

In a condition of health, from the light family driver to the heavy draught horse, the principle of shoeing is the same; the size, thickness, and weight only differing so as to adapt to each case, with the difference that when exceptional power is necessary, as for draft horses, or to prevent slipping, calkins must be used. As a rule, nothing more is wanting, unless necessary for extra wear, than just iron enough to protect the outer crust of the foot, and

prevent its breaking. More iron than this becomes extra weight, and causes fatigue in carrying, like thick, heavy-soled shoes or clogs.

It is a question among English authorities whether a shoe should be "rounded at the toe" (a practice known as the French system) to aid mobility. As shown by Fig. 478, it brings the bearing surface in the form of a circle.

On this point I copy here from Mr. Goodwin's new system of

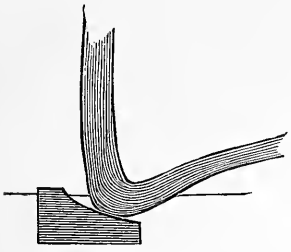

FIG. 475.

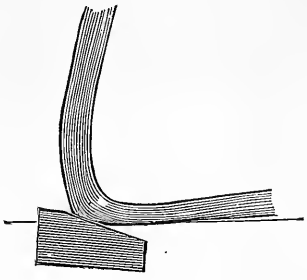

FIG. 476.

As the heel often rests upon the inner edge of shoe, with the bearing surface badly concave—a direct cause of contraction and weak heels.

shoeing. "If we refer," says he, "to the action of the fore leg, it will tend to explain some of the advantages to be derived from the curved shoe. When a horse is about to move, the first indication of motion is a bend at the knee, which raises the heels, and they become more and more elevated, till the toe (which is the last part that leaves the ground) is suspended for the moment that the foot is lifted. The base of the foot, just at its leaving the ground, is almost perpendicular. When the knee is bent to its fullest extent, the foot is then in the same position, with the heels of the shoe pointing upward. If we consider this first part of the motion of the limb, we find the movement of the foot very nearly describes a semicircle; and on viewing the form of the joints connected with the action, the necessity for a curve at the toe is clearly demonstrated. Again, the form of the shoe worn out, at

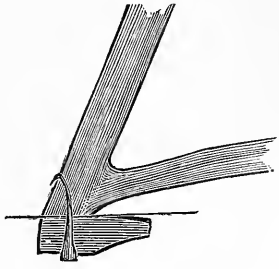

FIG. 477.—About as the shoe should be fitted.

once shows that it must be more suitable to put on a new one of that form, rather than to suffer the action of the leg to be opposed until it is worn to that form. . . .

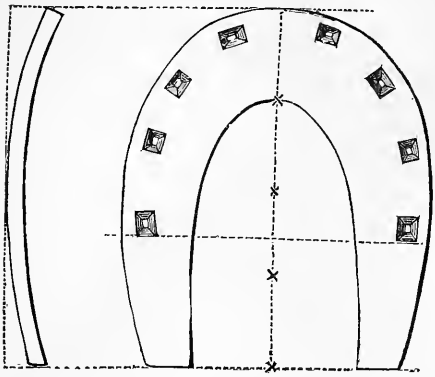

FIG. 478.—Model of a French shoe, showing average amount of curve.

"The fore legs may be considered simply as pillars of support, having no power of themselves to propel the body forward, progression being entirely performed by the hind parts. If it were not so, the action would be different, as I have before observed it to be in those horses that have great weights to draw; and this may be more readily observed in any draught horse going up hill. I have offered these remarks upon action, in order to bring the reader's attention to the curve of the French shoe at the toe. This form of shoe certainly harmonizes more with the motion of the fore foot than the English shoe does; it affords a greater surface of bearing at the toe than the projecting ridge of the straight, ordinary shoe, and is much more calculated to allow of the motion of the leg and foot; the labor of the muscles is also diminished, and the limb being in its natural position, the ligaments have less imposed upon them; they are more at ease, and consequently are not so liable to be strained."

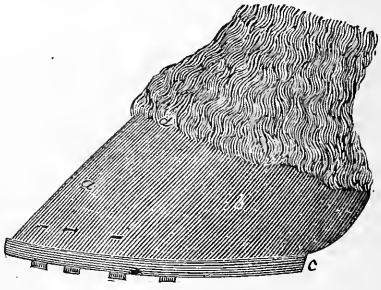

FIG. 479.—French shoe—taken from an old work. See Navicular Lameness.

A moderate rounding at the toe would seem desirable in all cases where there is want of mobility. It is especially desirable when the horse is a little stiff or sore, as it enables him to travel much easier. This is proved when the mobility of the foot is destroyed, and there is necessity for using a rounded shoe to conform with the action. When winter shoes, or calk shoes, must be

used, the forward calk may be set well back in the toe, as shown by illustration.

The object of nailing should be to hold the shoe firmly to the foot without injuring the wall, and leave the foot as independent of the restraint of the shoe at the quarters as possible. The nails should be driven where there will be most secure nail-hold; more or less as well as heavier nails being necessary, in proportion to the thickness of the wall, weight of the shoe, and severity of the work. The wall is thickest and strongest at the toe or front, and becomes thinner and more flexible toward the quarters and heels, especially so at the inner heels, where it is sometimes exceedingly thin and flexible.

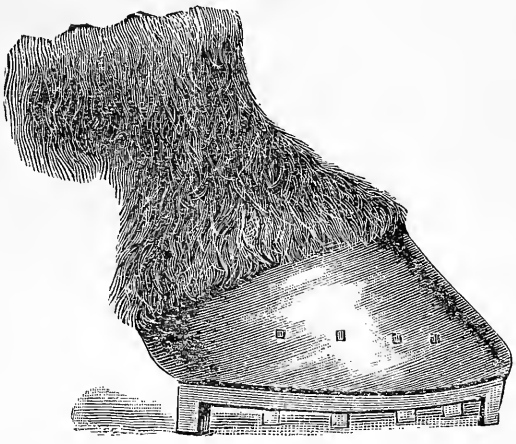

FIG. 480.—Shoe too short and thick, with nails driven deep, and too far back in the quarters.

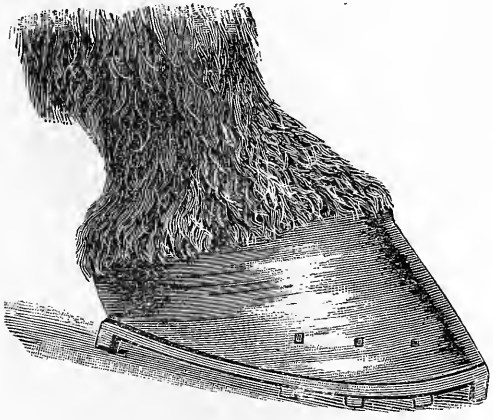

FIG. 481.—Nailing that will do no harm.

By reference to Figs. 423, 429, it will be seen that there is considerable difference in the breadths and form of the quarters; that of 423 is most noticeable. The end secured in this part being narrower and straighter, is supposed to be the prevention of interfering or striking; but the narrowness is compensated for by the increased height of the wall, for the purpose

of giving more bearing surface to the laminated structure. This inner quarter or wall is very much thinner and more elastic, and on this account it becomes necessary to give very particular attention to the adjustment and freedom of the part.

There has been much speculation during the past few years in relation to the cause of this quarter's giving out before the other, as nature evidently intended it to stand strain and wear equally with other parts. The cause, undoubtedly, is the interference in its mobility by bad fitting and nailing. This being true, it is evident that the principal nailing should be at the toe and front, because there is more horn there to nail to, and less liability to do harm by separating and breaking the fibers of the wall. They

FIG. 482.

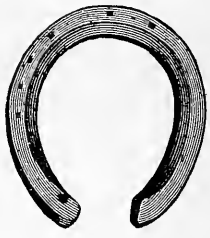

FIG. 483.

Turner. The unilateral method of nailing, with model of a shoe.

should not extend any farther back into the quarters than is barely necessary to give a safe hold of the shoe to the foot. The fewer and smaller the nails driven, the better, providing they are sufficient to hold the shoe. But much will depend, in doing this, on the accuracy of the fitting, thickness of the wall, and weight of the shoe.

If the nails are driven well back on the outer quarter, and only round in the toe of the inner side, for the purpose of affording more freedom to the quarters, it will be found that as the foot grows, the shoe will be carried to the outside quarter and toe to such an extent that the inner heel of the shoe will be drawn inside of the wall at the heel, and rest upon the sole, causing a bruise or corn. In addition, so much of the shoe being left unnailed, makes it liable to get loose and work under the quarter, which would cause a rapid wearing or breaking down of structure. All things

considered, the best way is to nail back to the turn of the wall securely. Or the nailing may be extended a little farther back on the outside, and shortened a little on the inner side, in any case giving both quarters all the freedom compatible with security, in retaining a firm hold of the shoe. As the foot grows, the shoe will be brought forward so evenly under it as not to do harm.

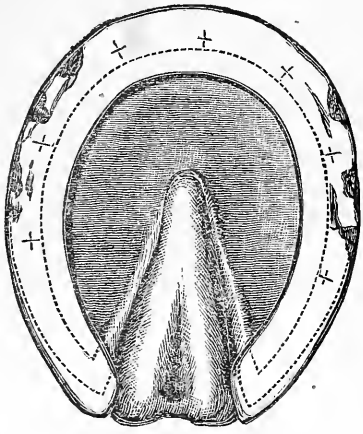

Fig. 484.—Points showing where the horn is strongest for the driving of the nails.

For ordinary light shoes, I am in the habit of using from six to seven nails, evenly distributed around the front part (something like Figs. 457, 459); sometimes extending the outer nail a little beyond or nearer the quarter than the inner one. But if the shoes are heavy, and the work hard, as for draught horses, heavier nails, and from seven to eight in number, will in most cases be required. A small, thin clip turned up at the toe, and one at the outer quarter, will help greatly in holding the shoe firmly in position; but they should be turned up thin, and set well out on the edge of the shoe.

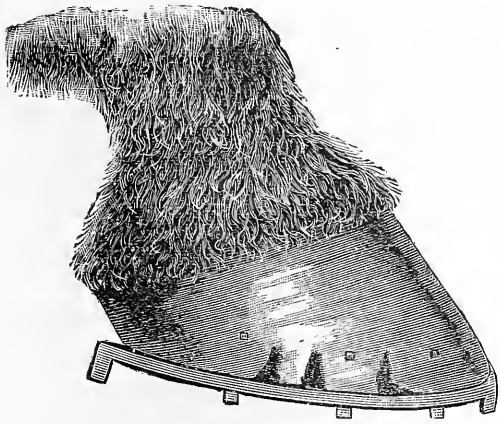

Fig. 485.—The same as it would appear with the shoe on.

But very little of the wall should be cut away, so as not to weaken or injure it; but sufficient to enable bringing the shoe to its position. The shoes should not be hammered down tight to the wall, but simply sufficient to rest easily against it. Next, if the foot is broken, or

much weakened by old nail-holes, punch the holes where there is soundest horn to nail to. A thin shoe will not admit of any fullering, because it weakens the shoe, without giving any special advantage in nailing. The stamp form of punching the holes should be used ; that is, the hole made larger at the surface and smaller at the bottom, so that the nail heads will fit into it exactly.

The method of driving the nails is next worthy of consideration. There are two methods ; one, starting the nail rather near the outer surface and driving high, called the English method, which is practiced very generally in this country ; the other, starting the nail deep and bringing out low, known as the French method, which leading authorities concede to be the best. If the nail is driven very near the surface, it is liable to chip or break the horn out, which injures and weakens the wall very much ; whereas driving deep and bringing out low, insures a good hold, and the wall will be almost grown out by the next shoeing. Consequently they should be punched deep over those points where the wall is thickest, and less so toward the quarters where it is thinnest, or proportionately farther from the outer margin of the shoe.

The common method of fullering all shoes alike, and bringing the nails at the same distance from the edge, can be no more adapted for all kinds of feet, than can the size of the shoe itself. This straight-jacket way of punching all alike, brings the nail-holes at the same location at each repetition of shoeing, so that if the shoe becomes loose, or is pulled off, this part of the wall is liable to be torn off, or so split and broken as to leave only a soft, imperfect horn. In resetting such a shoe, it becomes necessary to put it farther back under the foot in order to gain secure nail-hold. Not only this, but the portion of the protruding wall being cut down to the shoe, leaves it deformed and injured to an extent that several months' growth cannot repair. But if the holes be punched over parts that would give a secure hold, the shoe can be nailed on sufficiently firm to hold it without doing harm, and thereby preserve the symmetry of the foot. In such a case it may be necessary to nail rather close to the heels ; but even this had better be done for a short time than risk injury and malformation by the method named.

If by carelessness or otherwise a nail should be driven into the

quick, which will be known by the horse's flinching, it should be pulled out at once; or should a horse show soreness, after being taken out of the shop, the foot should be examined carefully by tapping over the part, and the nail at the point of soreness pulled out. (For more details, see treatment for Pricking, Rucking, etc., in latter part of this chapter.)

Clenching down the Nails.

When the nail is twisted off, the end should be filed down to the proper length, and, with the corner of the rasp or little punch, cut out the pith or raised part under the clench, and turn down lightly but firmly. The common custom is to make a deep notch with the corner of the rasp, which extends across the face of the hoof from one nail to the other.

This is so injurious, that it should not be permitted even to the smallest degree. No rasping of the outer surface of the wall should be allowed, excepting to touch or smooth any roughness of the clenches, and to round off the edge of the wall down near the shoe. It has been explained under the proper head, that the inner surface of the wall is soft and spongy, and that as it approaches the outer surface, it becomes hard and bony, and the fibers closer and denser, and that over the surface is a sort of skin or thin covering of enamel, that prevents too rapid evaporation of moisture; and it is necessary to retain intact this strong, fibrous horn, as well as that of its outer covering, so as to hold the nails firmly, as well as prevent the excessive evaporation of moisture which would follow.

Should the shoe be too short, which is liable to happen, to remedy the difficulty it is the common custom to set it back under the wall, and rasp the thick, strong wall, extending out over the shoe, down to it. Or, should the shoe be too straight or narrow for the foot across the points of nailing, to drive the nails so deeply as to not only endanger pricking, but to greatly weaken the wall.

The excessive rasping not only destroys the strongest part of the wall, that best able to retain the nail-holes and support concussion, but causes a serious internal disease not usually understood, which shows its effect in an absorption of the coffin bone and other parts beneath. Fig. 486 is a good illustration of this.

The specimen from which it is drawn, was obtained from Dr. Hamill. The small sketch is full size, and shows the exact appearance of its surface, and small points of horn which are over a quarter of an inch long, extending out like pegs.

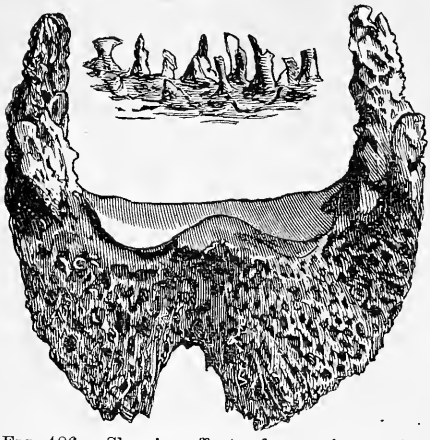

Fig. 486.—Showing effects of excessive rasping.

It is needless to add that this is the result of the most inexcusable ignorance, and the cause of much harm. If there is much wall extending out over the shoe, it should not be deformed by cutting down to it; the edge should simply be rounded off and let alone.

Shoeing the Hind Feet.

There is usually so little trouble with the hind feet, that it is scarcely necessary to give any directions as to their management. The horn is thickest at the quarters, and the principal nailing should be done there. Sometimes there is a curling under or contracting of the heels, which may be the cause of more or less inflammation, extending to the sheaths of tendons and other parts of the leg; in such a case, if thought advisable, either or both quarters can be treated as explained under that head.

I think it advisable, in this connection, to say a few words about pricking, which is more common than many suppose. It is not unusual, indeed it is a very common occurrence, to drive the nail too near the quick or into it, and thus by a little carelessness cause great harm. First, if the nail be driven so as to go to the quick, in which case the horse may show it by flinching, it should in all cases be pulled out at once, and the hole be left vacant. If this is done, no harm will follow. Sometimes the smith, especially if he expects to be scolded, will drive the nail down, which in a few hours or next day will show itself by making the horse lame; or the nail may be driven so deeply as to go near the soft parts of the inner edge, and when the point strikes the hard horn of the

outer surface, it may bend inward or press upon and break through to the sensible parts. This is called rucking. (See Fig. 420.) The nail should be pulled out at once.

Still another cause of harm is what is termed fitting and drawing the nails too closely. If the nails are driven rather deep and clenched down firmly, they are liable to bend inward and press upon the sensible parts. This is called pinching. If present when the horse is shod, and it is noticed that the nails are driven rather deep for the thickness of the wall, insist upon their being driven farther out.

An ignorant or thoughtless man may claim there is no danger, when he is driving the nails much too deep. Should the horse show soreness or lameness within three or four days after being shod, especially if he puts the foot forward to ease it, give the matter attention at once. First rest the hand lightly upon the hoof to discover whether there is any unusual heat, and if so, at what point ; next take a light hammer or small stone, and tap lightly round over the nails, until the horse flinches, when the offending nail or nails can be discovered and pulled out. If this is done soon after being shod or during the same day, all that may be necessary to do is to leave the nail out.

I have had success by pouring a little callendula into the hole. In one case, where there was considerable soreness a few hours after being shod, though the horse was quite lame on account of the nail being driven too deep, after pulling out the nail, a little callendula was poured in, and the shoe again put on, and the horse in a few hours was free from lameness. But if he shows lameness in a day or so after being shod, cut away the wall from around the hole, so as to let out any matter which may have formed. Next poultice the foot until the inflammation subsides, then cover the hole with a little digestive ointment (which is made by melting together equal parts of tar and hog's lard, and stirring till cool), over which put a little tow and put on the shoe.

More especial directions will be given under the head of Pricking, Rucking, Nail in the Foot, etc., in Medical Department.

Contraction.

I am now entering upon what must be considered as practically new ground. There is nothing published by any author of whom the writer has any knowledge, explaining reliably how to cure contraction and quarter-crack. Indeed, the leading veterinary surgeons of the country seem to be so much at sea in relation to accomplishing this, that they do not pretend to give practical

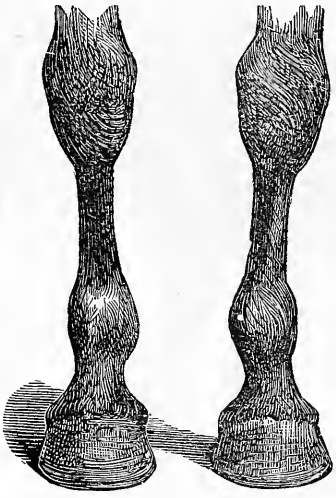

Fig. 487.—Front view of sound, healthy feet.

Fig. 488.—Side view of sound feet.

treatment. The treatment herein given is published for the first time, and will be found as reliable and effective as it is simple.

I give illustrations of the usual position assumed by horses suffering from contraction, as well as appearance of feet and legs generally, in Figs. 489, 490, which have been drawn from life. The contrast between such conditions and those of health, which are also shown, are quite noticeable. By looking at Figs. 414, and also 448 to 452, it will be seen that the arches formed by the union of the bars and frog near the extreme of the heel, extend well upward into the foot. Fig. 493 shows the outline of the hoof in its natural condition. Fig. 494 shows the heels somewhat

drawn together, and a corresponding elevation of the sole. Fig. 494 shows extreme contraction of the quarters, now perpendicular, with the arch of the sole correspondingly acute and elevated. The points before referred to, noticed inside the heels in this condition, are crowded together as well as upward, so that in extreme contraction they press upward severely against the great tendon, where it passes over the navicular bone. This, in connection with the strong upward pressure of the sole against the bottom of the coffin-bone, forces the whole internal structure upward, as it were,

FIG. 489.—The effect of contraction and soreness.

FIG. 490.—A bad case of contraction and soreness.

out of the hoof, thereby seriously interfering with, or obstructing, the circulation, as well as locking the whole machinery of the foot. Consequently the whole foot is tied and cramped, by such unnatural pressure upon the soft parts, so that walking, or even standing, becomes painful. In this condition the horse will stand first upon one foot, then upon the other, or put the worst one forward, to ease the pain and pressure upon it. In traveling he will try to shield the feet all he can from concussion.

For over two hundred years there has been great effort made to prevent and cure contraction. I give a few illustrations, mainly from the French, out of a large number coming into my posses-

sion, used for this purpose during the past one hundred years. We see first not only a hinge shoe, but a combination of hinges. Next, shoes with clips, by which to spread the heels. The shoes, after being fastened on, were spread by screws and other means, some of which were quite ingenious in their construction, but not of sufficient importance to give them a place here.

In 1802 Prof. Coleman introduced and patented a convex shoe. See Fig. 502. Goodwin soon after introduced a combination of this form of shoe with that of the French system of rounding or

FIG. 491.

FIG. 492.

How a horse stands when sore-footed.

turning up the toe. Bracy Clark, in 1809, devised a shoe with a hinge at the toe, with a steel rivet to protect the joint from wearing, so that the quarters could have freedom to expand. See Fig. 503. I find also that this form of shoe was devised as long ago as the 16th century, by Ceasar Fiaschi, specimens of which are given in another part of this chapter. He also gave the "bar," and other shoes. But the most recent modification of this form of which the writer has any account, was made by a man in New Hampshire in 1875. He had a shoe jointed at the toe, with wide bar at the heel, so fitted that one edge overlapped the other at the center. See Fig. 501. The bars were made of malleable iron, about three-eighths of an inch thick, with slight calks at the heels,

and riveted together at the toe. On this shoe he claimed to have a patent. I was invited to examine the feet of several horses having these shoes on. In some cases the bars were separated from an eighth to a quarter of an inch, by the spreading of the quarters. This expansion was partly owing to the natural enlargement of the quarters by growth, and frog pressure. But the same, or even better, results could have been obtained by the use of an ordinary thin shoe, as this would give the frog contact with the ground, provided the quarters were not unduly restrained by excessive nailing.

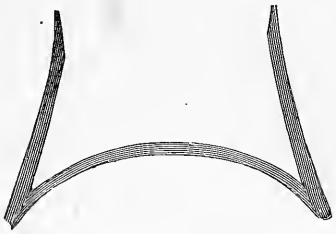

Fig. 493.—Showing the usual arch of sole in a healthy foot before contraction.

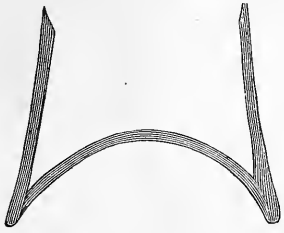

Fig. 494.—Showing arch of the sole bent upward by partial contraction.

The shoe above described would be of undoubted advantage on pavements or rough roads where the thin shoe could not be worn, as it gives necessary support to the frog, while protecting the foot from the rough pavement; but, as explained elsewhere, the frog will not always bear long-continued pressure of this kind without producing harm.

About twenty years ago, a smith named Terrel, in Batavia, N. Y., devised a shoe for the cure of contraction, with clips turned up at the inner side of each heel, with the forward part weakened on each side of the toe. The foot was simply beveled down, the shoe fitted to it closely so that the clips rested against the quarters at the point of the heels. It was firmly nailed on, well back upon the quarters on each side, and the quarters recklessly spread with the tongs. He had very strong indorsements from leading horsemen, claiming its effectiveness for curing contraction, etc., and doubtless it was successful in curing many cases;

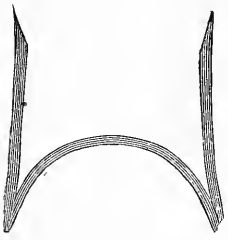

Fig. 495.—Showing the sole bent upward, pressing against the tendon and joint in center of foot, caused by contraction.

but in spite of the utmost efforts made to introduce it, it went into disuse.*

But the most striking innovation was that made by a man

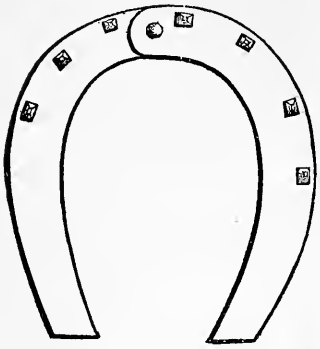

FIG. 496.—Hinge shoe for cure of contraction. From a French work.

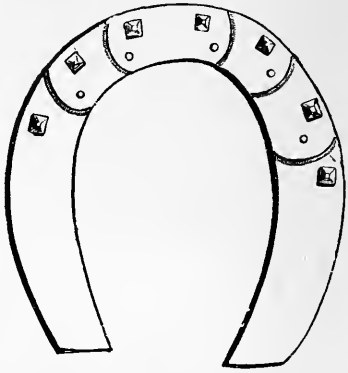

FIG. 497.—Form of shoe devised for preventing contraction. From a French work.

named Dunbar, whose method consisted in cutting away the bars, opening the heels, and cutting out the sole almost to the quick, then fitting the shoes larger, and nailing back to the quarters. The principle was, that the removal of this horn which tied the heels together, enabled the quarters to spread and grow wider. While this seemed but a crude idea, it was, however, so successful in many cases as to attract considerable attention, and proved an additional step toward the key of curing contraction.

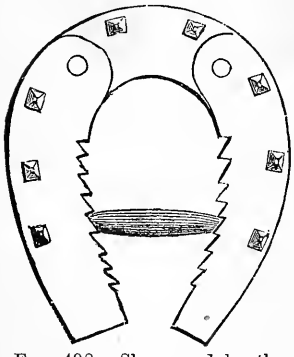

FIG. 498.—Shoe used by the French for the cure of contraction.

The government gave this man

* Passing through this part of the country in 1866, I was persuaded by this man to have such a shoe put on one of my horses that was a little lame in one of his feet. I cautioned him not to nail the shoe on too firmly, or open it too violently (which I could see was his intention to do), as it would be sure to cause serious irritation in the foot. But disregarding my wishes, assuming that he knew just how to do it, and saying that it would be all right, he put it on in his own way. The result was as I had anticipated; the lameness that followed soon compelled me to take it off.

$25,000 for teaching the secret to the veterinary surgeons of the army. His instructions in explaining his system were as follows:—

"If the foot is healthy, and of a natural shape, and has been shod regularly, no alteration is required, but simply to pare out the sole of the foot, removing the bors [bars] entirely, and opening out the heels back. The surface of the frog should be trimmed out very little, but the sides should never be touched. By removing the bors [bars] and opening out the heels, contraction is prevented, and the frog retains its natural shape, because all pressure is removed

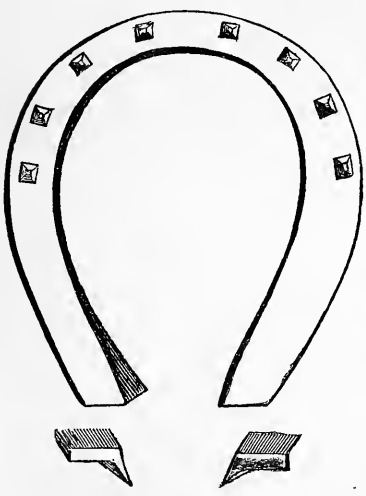

FIG. 499.

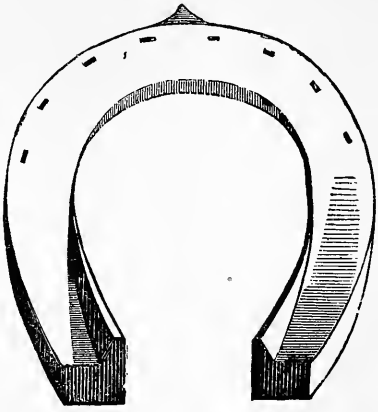

FIG. 500.

Old forms of shoes used by the French for the cure of contraction.

from each side. The shoe is now to be fitted and nailed on moderately tight.

"The treatment for contraction, briefly speaking, is expansion. If the horse is lame, the farrier should shorten the toe, lower the foot all around, and open the heels back, until the blood is drawn. The sole of the foot should be pared as closely as possible on each side of the frog. The frog should be lowered, but the sides should not be cut. A groove should be made with the rasp, just under and parallel with the coronet on each side, deep enough to draw blood; then, with a fine shoeing-knife cut little notches down from the coronet at equal distances across the entire length of the groove. These notches should be deep enough to draw blood. This will relieve the pressure caused by contraction of the cartilages on both sides, and allow them to resume their proper shape.

"The shoe must be very carefully fitted, and have eight nail holes, for the reason that it is the heel nails that relieve a foot while

in contraction. It should be so fitted as to project a quarter of an inch on either side of the foot, and so as to see the nail-holes projecting on either side of both outer and inner quarter. This accomplished, the bearing should be equal. The nails should be driven half way, first toward the toe, then toward the heel. The higher they are driven the better, the shoe being fitted so wide there is no fear of pricking. The nails toward the heels should be driven by alternate taps on each side, because the foot expands on account of being pared so thin on either side of the frog. Considerable soreness will result from this mode of treatment, which may be relieved by keeping the feet wet, or by poulticing."

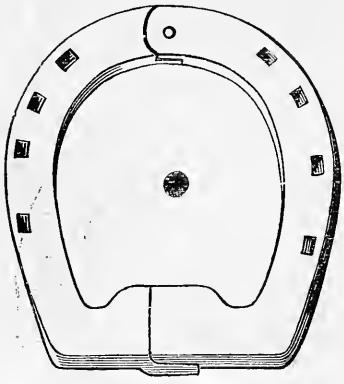

FIG. 501.—Hinge bar shoe for cure of contraction.

This principle of treatment was well understood long before Dunbar's day, and doubtless was obtained by him from old authors. In relation to the scoring of the wall, J. Clark, in his work published in 1782, says:—

"When, according to the general method, a long shoe with a broad web is unfortunately put on, which is made thicker at the heel than at the toe, the consequence which commonly ensues is that of hindering the expansion of the heel of the foot, which in that case soon overcontracts itself. This circumstance produces very great pain to the foot by occasioning too great a compression of the cartilages, and of the blood-vessels by which they are surrounded. To ease these blood-vessels, *I have known scores made perpendicularly all the way down every part of the outward wall with a drawing-knife*, and the blood taken by a lancet underneath. This is but a partial remedy, and frequently a bad one; for although temporary ease may be given to the foot by a process which possibly does diminish the power of contraction in the heels, as long as the crust is weakened by the scores on the wall; yet as the crust is perpetually renewing itself, the heel has in a short time a power of becoming still stronger and more contracted, after the temporary weakness has ceased, which was occasioned by scores. But the worst of all, although too often practiced in the case, is the *cutting away the bars*. This causes the heels to contract, having no mechanical power to open and hold the quarters in place."

Bracy Clark, in his work published in 1809, in describing some of his experiments on contracted feet, says:—

"*The bars were pared away from the frog*, the heels, as we were

used to term them, were well opened, the quarters rasped thin, and to give it the better chance of expansion, a deep longitudinal channel was cut with the drawing-knife, down the front of the hoof, that it might have no resistance to the expansion of the sides; further, to assist these measures of dilating the heel, they were drawn very thin, and the bars as much as possible clear from the sides of the frog. . . . .

"In the course of making these experiments, a circumstance occurred which gave me much satisfaction, for I found that if the horn of the bars or inflexures of the hoof were pared away from the sides of the frog, it greatly contributed to the pleasantness of his going."—pp. 104, 109.

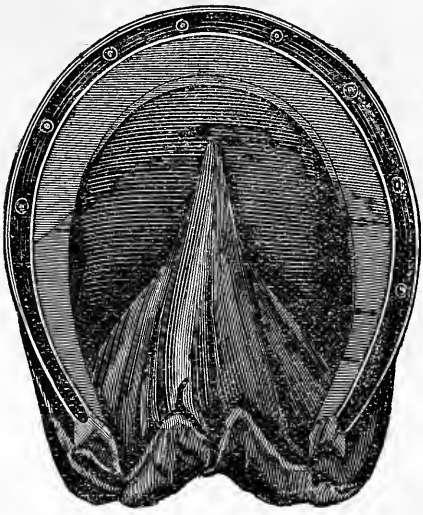

FIG. 502.—Coleman's convex shoe.

Many other passages of this description could be included, if desired. Of late years there have been many parties traveling through the country, claiming to cure contraction and all diseases of the feet, by sawing into the heel, and with the screw or other means violently spreading the quarters apart, subjecting the poor animal to so much pain and torture by the operation that frequently he could not stand up for many days. This was regarded as a matter of no consequence, as the horse would soon get over it. The main point was to get all the money they could, and get out.

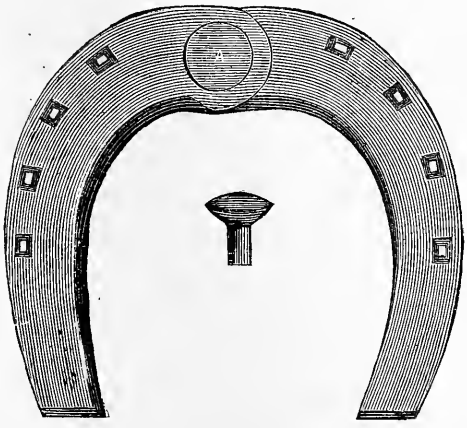

FIG. 503.—Bracy Clark's hinge shoe.

Contraction is induced by six different causes, all acting more or less upon each other to aggravate the difficulty: 1. Trimming

the frog and sole so as to cause them to lose their moisture. 2. The thickness of the shoe, greatly increased by high calks, which removes the frog and sole from all contact with the ground, and prevents them from obtaining moisture from it.* 3. Bad fitting of the shoes, by which means the bearing surface of the heels is made to a greater or less degree concave, so that when weight is thrown upon the limb, the heels slide inward. 4. Nailing back in the quarters so that as the feet grow, instead of becoming wider as they would if free, they are to that degree crowded together. 5. Allowing the feet to become too dry; because the drier and harder they become, the more direct is the tendency to become small. 6. If from any cause inflammation is produced in the foot, it will in a short time perceptibly diminish in size. See Figs. 505, 506, showing the effect of acute or chronic inflammation in causing severe and rapid contraction.

FIG. 504.—Pony that cut his foot seriously by calking, causing so much inflammation and pain that the foot was held up, as represented, for several days.

The results of these causes, separately or combined, are sufficient to ruin even the best of feet in a short time. But all the efforts heretofore made for the cure of contraction seem to have been simply to spread the heels open, which failed of making a cure on account of the crude way in which it was done, regardless of bringing about a natural condition of circulation, whereby healthy tissue could be grown.

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*I would remark here that keeping horses in stalls so narrow that they are greatly restricted from moving more than a few feet, and with floor largely inclined backward, is not only so exceedingly hard on the feet as to be a cause of fever and contraction, but so uncomfortable for the horse, that every humane owner should do what he can to remedy the difficulty. Particular reference to this will be found under the head of "Stabling."

Contraction may be divided into three different classes: 1. A general compression or drawing in of the wall upon the vascular structure. 2. When but one or both quarters are drawn in. 3. When the heels are curled in, or pushed forward under the foot. Hence the prevention and cure of contraction must depend upon removing excess of horn, frog-pressure, freedom of the quarters, or, if necessary, opening them mechanically as desired, and upon moisture. Any of these conditions lacking, there must in serious cases be partial or entire failure, no matter what the means or methods used. If the feet could have conditions that would afford natural moisture, and the shoes made so thin that the frog and sole could have reasonable contact with the ground, the quarters so free that they could expand with the growth of the feet, there could be but little if any contraction. We see that in all cases where there is reasonable frog pressure, it becomes larger, firmer, and more elastic; while raising the frog from contact, causes it to become small and hard, the quarters to draw in, and the whole foot to diminish more or less in size. But if not accustomed to pressure, it should be given gradually, in connection with keeping the feet thoroughly softened, so as

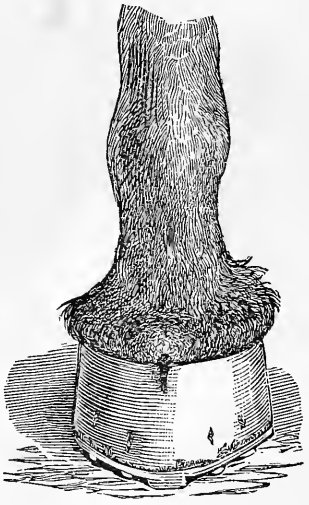


FIG. 505.—The foot after the inflammation subsided, growing down nearly a quarter of an inch larger.

FIG. 506.—The foot drawn in and deformed from long-continued inflammation caused by a nail being driven into the foot. The hoof growing about half an inch larger after the inflammation subsided.

not to excite inflammation or soreness. It would not do for a man accustomed to wearing boots for years to suddenly go barefoot on rough, hard ground. The skin on the feet is so thin that they would be made sore, and be liable to serious inflammation. In like manner it would not be prudent to bring the heels and frog of a horse's foot, that has long been accustomed to the protection of thick shoes, suddenly to the ground. If there is but little contraction, with fairly good condition of the feet, all that will be necessary to do is to level down the feet, and remove any surplus of old horn from the sole, put on thin-heeled shoes, and keep the feet soft by moisture.

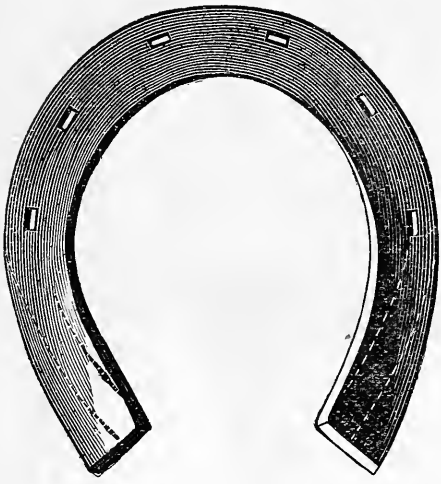


FIG. 507.—Bearing surface of convex shoe.

The next simplest and best method would be to use the convex shoe. After leveling and trimming out the foot properly, as before explained, cut away or weaken the arch between the bars and frog sufficiently to allow of some elasticity of the quarters, then fit the heels nicely to the bearing surface of the shoe. In doing this, care should be taken to leave them sufficiently deep to enable matching the bevel of the shoe nicely without cutting away or lowering the wall too much. No horn should be left projecting inside, as it would form a wall against the inner edge of the shoe, and prevent the heels from spreading. Of course no nails should be driven back in the quarters. As before explained, the frog should gradually be given contact with the ground. As the quarters are opened, the shoe can be taken off, made larger, and reset, until the foot is reasonably expanded, when a level bearing surface may again be used.

But for anything like a bad condition of contraction, more direct and positive treatment will be necessary. For example, if the foot is badly contracted, the frog small, and sole forced upward acutely, the whole internal structure, in fact, locked and tied, as

it were, by the severe compression of the wall, three conditions are necessary: First, complete elasticity of quarters and sole; second, power to open quarters so as to relieve pressure, and allow the sole to settle back to its natural position ; third, gradual frog pressure so as to restore a healthy condition of circulation and strength of parts. The first important step in the treatment is to thoroughly soften the feet. The simplest way of doing this in the stables is by tying two or three thicknesses of blanket around the feet and keeping them wet for about twenty-four hours ; or better, fill two small bags with bran, put a foot into each, and tie a string loosely around the top of the bag and leg above the fetlock. Put each foot into a bucket of water, and afterwards pour on water to keep wet ; or the horse can be made to stand in mud till the feet are soft.

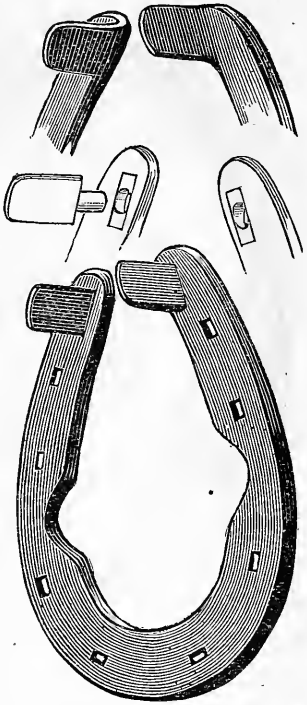


FIG. 508.—The shoe as fitted before being put on.

There is usually a large accumulation of horn, especially at the heel, all of which must be removed, and the wall leveled down to its proper dimensions. Next, with the drawing-knife pare out the sole; not enough to make it bend to pressure, but more than beyond the removal of the old horn. Then with a small knife, which should be made expressly for the purpose,* weaken the wall between the bars and frog, by scraping or cutting out the bottom of the channel, back to the point of the heel so much that when pressure is brought upon the heels outward, there will be no impediment to their opening freely at their upper edge. To do this, commence well forward near the point of the frog, and cut back, following the line of the arch carefully. Particular care should be taken not to cut

*Let the blade be made straight, with a cutting edge on both sides. Turn the end about a quarter of an inch, temper and grind down to a keen edge. It should not cut a channel much more than one-eighth to three-sixteenths of an inch wide.

so much at any part as to cause bleeding. On this account the operator should feel his way cautiously, cutting deeper as he goes back. The bar should be cut away to within three-quarters of an inch from the point of the heel. No more should be cut away from the rest of the bar, or part coming under the clip, than may be necessary to give a straight shoulder for it to rest against. Both sides must be treated alike. If the part has been cut through in the least, it should be protected after the shoe is on by melting a little rosin and tallow into it, and covering with tow.

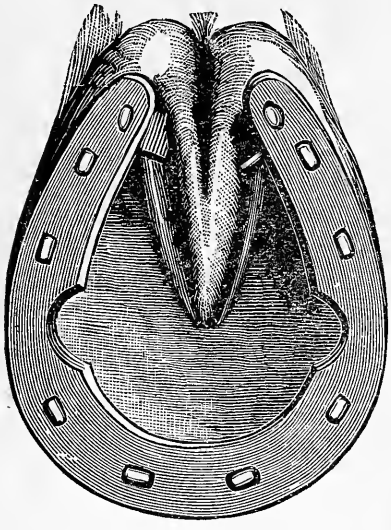


FIG. 509.—The shoe when on.

By looking at Fig. 413, an outline of this arch can be seen on the inside. There have been many ignorant and pretentious quacks, who have presumed to weaken the heel by sawing in between the bars and frog. Only a very small point can be reached in this way, without cutting to the quick. The saw cannot be used here at all with advantage. The point is to weaken the horn at the bottom of the cleft so that it will spread freely, and this can be done properly only with the cutting knife. The proper flexibility of the heels can be judged by a slight pressure with the hand.

This done, our next object is to remove the compression of the wall. To do this, fit to it a rather thin, flat shoe, made of good iron. At the heels it should be made a little wider and longer than the foot, and the nail-holes punched, as in Fig. 508. Lay on the shoe as intended to be nailed, and with a pencil make a mark over the inside of the bar at the point of the heel on both sides. This done, accurately punch or drill two holes through the iron, about three-sixteenths of an inch in diameter. If it can be done, it would be better to have the holes beveled on the inside of the bar, extending up and back at the point of the heel. Next, take

two little pieces of good iron or steel, about three-fourths to seven-eighths of an inch long, by about three-sixteenths thick, and about five-eighths of an inch wide. Cut down the end until it will fit the hole in the shoe, and rivet it, as shown in Fig. 508. These are now to be warmed and bent, and, if necessary, filed so as to lie flat against both heels, and just long enough to come a little short of touching the soft horn above it. Next weaken the shoe a little on both sides, which may be extended over a much larger space than shown in Fig. 509; or if the shoe is not very heavy, it may be spread without weakening. Regulate so as to come a little forward of the point where the hoof begins to draw in. If the shoe is thin, the inner edge should be turned up and formed into a clip, which, with a little care, can be filed and fitted. But if the shoe is at all thick, it would be somewhat difficult to do this; for if the clip is turned up so that the shoe is too large or too small, a very tedious, annoying bungle would be the result. In addition, it would be difficult to make the clips sufficiently long to enable bringing pressure as high up against the wall as it will admit, which is a very important point towards opening the upper part of the hoof.

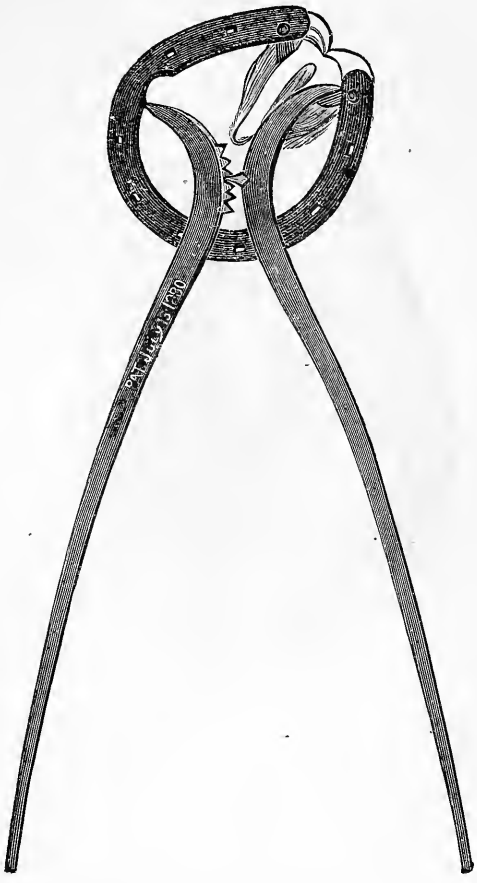


FIG. 510.—Spreaders in position to open the heels.

The method before given, which necessity compelled me to devise and adopt, makes this simple and easy to do; and except the shoe is so thin as not to admit of punching or drilling, it will be found by far the simplest and best method of forming the clips. When properly adjusted, nail on carefully. The nails around the toe may be larger than those driven in the quarters; and while driven so as to give a good hold, and rather high, if the feet are at all sore and tender, great care should be taken that the hammering is not too heavy, nor the nails driven deep. The clenches should simply be turned down lightly. If the hoof extends out over the shoe at any point, it should be no reason for more rasping than merely to round off the edges of the horn. Let it alone. It is frequently the case that one quarter is more contracted than the other; in fact, it is not unusual to have one side of the heel very much drawn in, while the other may be very little, if any, contracted; so that two conditions must be met, namely: first, to open either heel as little or much as may be desired, independent of the other. This the spreaders (which have been devised and patented by the writer) will enable doing in the most perfect manner.*

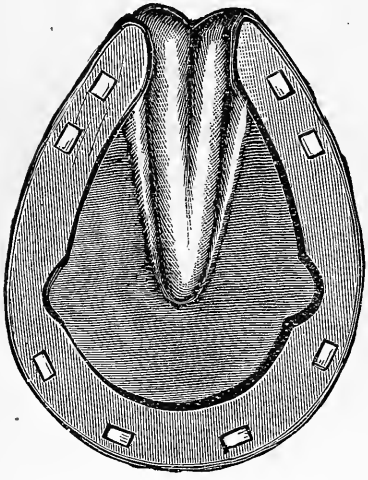


FIG. 511.—The shoe as nailed on to be spread.

However necessary it may be to have this part of the work well done, it is, in reality, but a preparatory step for what follows. First, if a tongs or screw be used to spread the shoe, the pressure being made equal on both sides, the side which is weakest must do all the bending—opening that quarter too much without affecting the other at all. Another cause of difficulty, is not having

* Simple as these spreaders are, the writer has found it very difficult to have them made properly. On this account he has found it necessary to have them made according to an exact pattern, and they will be furnished at a moderate price to those desiring them.

the tongs convenient with which to spread the shoe, and it is put off too long; and when finally attempted, done so roughly, or opened so much, as to cause violent inflammation and lameness. With the spreaders, this difficulty is entirely overcome.

The method of doing this should be about as follows: First, measure between the heels of the shoe carefully, by cutting a bit of straw or stick the exact length between them, and then estimate how much each heel will bear opening without causing soreness. Unless the foot is very soft and elastic, it is hardly prudent the first time to open them more than a quarter or three-eighths of an inch. It is well to first open the quarter most contracted, which, until brought out to balance with the other, should be opened the most. Then measure again and spread the opposite side. If opened too much, or enough to cause soreness, a few light taps of the hammer against the outside will set it back. The feet should be kept soft by stopping with flax-seed meal, and tying two or three thicknesses of blanket around, and wetting occasionally. In the course of an hour or two examine the condition of the feet carefully. If the horse puts out one foot, or indicates the least soreness, the quarters have been opened too much, and they must be at once knocked back sufficiently to relieve the undue pressure, and kept wet. It is rarely, however, that the spreading of a quarter, or even three-eighths of an inch, will at first cause any soreness. On the contrary, it always gives relief. Still I think it necessary to use care. The horse can be driven or worked moderately, if desired. In two or three days the spreading can be repeated, but now not so much as before, and again in three or four days following, and so on at longer intervals.

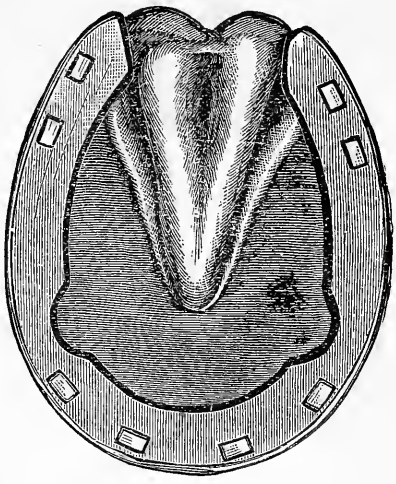


Fig. 512.—As the shoe appears after being spread.

If the foot has been properly prepared, two points will be

accomplished by this spreading, namely, the severe compression upon the vascular structure and coronary ring will be immediately relieved, and the sole, which in all cases of this character has been forced up, as shown, to an acute angle, will straighten and let down. To aid this, the sole must by paring be made so flexible that, as the foot is opened it will settle down and come back to its natural condition. The soreness resulting from the compression of the parts will be removed, and a better condition of circulation and nutrition result. By this course the mobility will not only be restored, the horse travel with more freedom and confidence, but as the hoof grows down it will become thicker and of a better fiber.

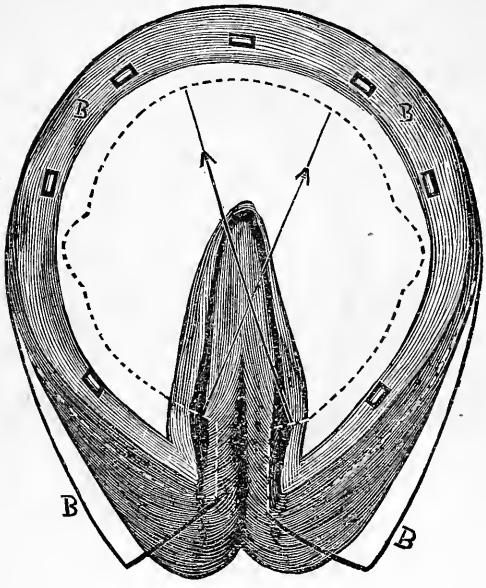


FIG. 513.—Badly contracted foot. The lines B show the degree to which the foot can be safely spread.

As before explained, to bring about a healthy condition of circulation and nutrition, the frog must necessarily be given contact with the ground to the degree it will bear, which should be provided for by the thinness of the shoe. In some simple cases nailing the shoe to the heel, as shown in Fig. 511, may be sufficient to hold the quarters firmly enough to enable spreading them as desired. The objection is that the wall is so thin at the point of the heels, that it may be difficult to get a good nail hold without pricking or breaking out; besides, the nailing cannot be repeated. The nails should be small and driven very carefully, getting as much hold as the horn will admit of. The supposed objection to this plan of opening the quarters is, that it prevents their natural

elasticity by their undue confinement. But this is not a valid objection; because in the direction it is desired to give them freedom outward, it only facilitates it, while at the same time it gives a certainty and positiveness of relief that cannot well be secured in any other way.

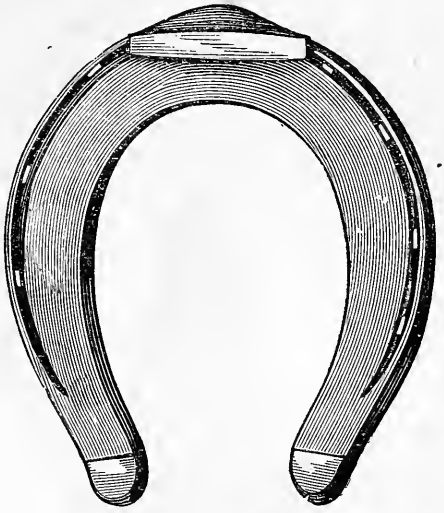


FIG. 514.—Draught or express shoe. Model from Dr. Hamill's collection.

Curling Under of the Heel.—This has heretofore been an extremely difficult form of contraction to overcome, but by the treatment given is not at all difficult to manage, because it gives the power to force the quarters back in place to any degree desired. It simply requires a little more care in making the adjustment. As this form of contraction is mostly common to heavy team horses in large cities (though not uncommon now among roadsters), and directly the cause of ruining a large number of the finest horses, I will include some additional explanations on its treatment. Usually the foot is broad and healthy-looking, till at the back of the turn of the wall, from which point the heels are turned under, and drawn to almost a sharp point, entirely closing the commissuers. The wall is thin and weak, growing very slowly, with frog extremely small and hard. This form of contraction is mostly caused by wearing thick shoes with the bearing surface so formed that the heels rest upon sharply concave surfaces, which tends to crowd or force them together; also by excessive paring and want of moisture.

The writer visited several shops to note the details of shoeing such horses, and with a view of getting exact illustrations of the average of such shoes. The frog, sole, and bars were cut down excessively—the sole so that it would bend to the pressure of the thumb,—and the bearing surface of the heels so scooped out, that

only a very narrow edge of the outer wall gave a bearing surface. In addition to this senseless, bad treatment, which will destroy the health of any good foot in a short time, it was noticed that the form and fitting of the shoe were equally bad; so that it was not difficult to understand why naturally good feet were soon ruined by such shoeing. Next, it was noticed that the seating extended clear out to the nail-holes, leaving but a comparatively narrow edge for the wall to rest upon. A number of average shoes were obtained and photographed for the purpose of explaining the cause of such bad effects: but it was found upon trial that it was impos-

Fig. 515.—The shoe as drawn.

sible to bring out the defects sufficiently plain to be of any account, and as the next expedient, an exact drawing of one of the shoes (Fig. 575) was made, showing the concavity at different points of bearing surface of the quarters. The dotted lines show the location of the heels upon the shoe. To explain this more clearly, three drawings of transverse sections are given; (*a*) shows by two points outside the inner edge where the outer edge of the heels rested; (*b*) the same at half the distance between there and the center of the clip on the sides; (*c*) at that point. See p. 688.

In the first place, the shoe is made very much longer and wider at the heels than the foot, for the purpose of making them look wide. In these cases, not only the bearing surface itself is largely bevelled, but this bevel is greatly increased by the seating, which

is carried well back to the heels and extended out to the edge of the nail-holes, the point of the heels extending even inside the inner edge of the iron. Out of the eight specimens selected from a pile of old shoes, there was but one exception to this. The consequence of such treatment is that the heels are constantly being crowded forward and under as weight is thrown upon them, which, with an excessively pared condition of the foot, causes such rapid loss of moisture that the heels become curled under, weak, and contracted. Now follows the putting of leather between the shoe and foot, the use of hoof liniments, and other means of relief, without any practical benefit.

I copy here the remarks of an old author, J. Clark, of Edinburgh, Scotland, in 1782, showing the bad effects of this treatment :—

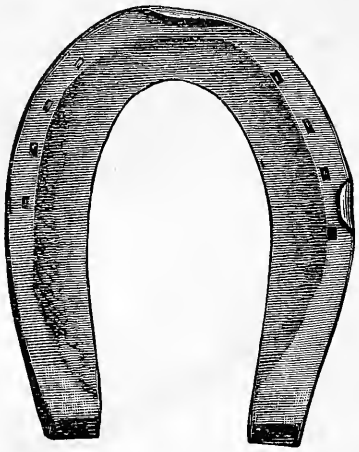


Fig. 516.—The previous shoe, engraved from photograph. Would not bring out concave appearance.

"They cannot be satisfied unless the frog is finely shaped, the sole pared, and the bars cut out in order to make the heels appear wide. This practice gives them a show of wideness for a time, yet that, together with the concave form of the shoe, forwards the contraction of the heels, which, when confirmed, renders the animal lame for life."

The principle of shoeing such horses is the same as in that of others : First, to level down the wall without interfering with the sole or frog. The bearing surface of shoe to be flat, and bent to the form of the foot, so as to support the wall evenly all the way round ; the shoe to be no heavier, and the calks, if used, no higher, than is barely necessary to sustain the wear to which it is subjected. In addition, the feet should be kept soft by stoppings and coverings of wet cloths at night. This should be especially attended to during dry weather, or when the feet are hot or feverish from severe work.

The treatment for the cure of such is practically the same as for other conditions of contraction. Of course, much depends upon

the skill and ingenuity brought to bear in the treatment. In fact, herein lies most of the success in the management of all conditions of contraction. In my experience I never have found a smith who could catch the points of properly preparing the foot and fitting the shoes for such cases. In every instance I have been compelled to stand over the shoer, and dictate every movement, or do part of the work myself. First, the want of judgment in preparing the foot; second, in adapting the weight of the shoe to the foot, and fitting the clips so as to enable opening the quarters easily and surely as desired.

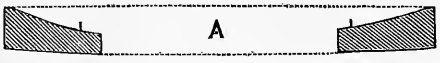


FIG. 517.—Concave bearing surface of shoe at heel.

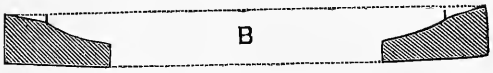


FIG. 518.—Concave bearing surface of shoe between heel and turn of foot.

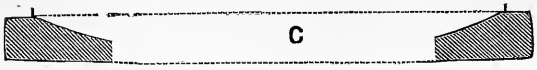


FIG. 519.—Concave bearing surface of shoe at turn of foot.

Since writing the foregoing, my attention has been called to a very simple and practical method of opening the quarters for the cure of contraction, illustrated in Fig. 522, and devised by Mr. David Roburg, a practical horse-shoer of great ingenuity and skill, who is located in No. 106 West Thirtieth street, New York City.*

This spring he patented fourteen years ago, and has since used it with marked success. Various methods of opening the heels on this plan have been familiar to me for many years. Fig. 520 is a specimen of form which I copied from an old French work. I also saw a spring almost the same in form and principle of ad-

* My attention has been particularly attracted to this gentleman's method of treatment by two incidents: First, in a conversation, some years ago, with Mr. Bonner, who is himself undoubtedly one of the closest and best living students of the principles of shoeing in this or any other country, by his stating that Mr. Roburg was probably the most profound student in the art of shoeing in the country; second, by learning at the Columbia Veterinary College of his remarkable success in the cure of a case of lameness that was pronounced by one of the highest authorities in the city as an incurable case of navicular-joint lameness. Special reference will be made to his method of treatment for this difficulty under the head of Navicular-Joint Lameness.

justment which was devised and patented a few years ago by a horse-shoer in the upper part of New York City. But Mr. Roburg, by giving more length to the spring, and simplifying its construction, makes it all that can be desired. The spring is made of steel, the exact proportion and adjustment of which is shown in Fig. 522. The wall is first weakened by sawing down slightly between the heel and frog, when the spring is placed in position with so much force given to it as may be thought necessary to press the heels outward as desired. The shoe is then nailed on over it, as ordinarily done. The pressure is gradual and constant, and must prove just the thing where both quarters will admit of equal pressure. But should one quarter be much more contracted or unyielding than the other, it would not work so well, because the full pressure would then be thrown on the weaker quarter. This is in part obviated by nailing the shoe well back on the quarter of the opposite side, which would prevent that side from being acted upon.

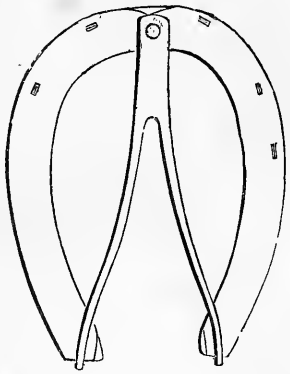


Fig. 520.—Shoe with spring for cure of contraction. Copied from the French.

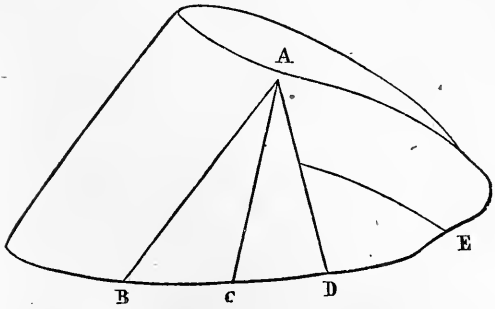


Fig. 521.—French method of shoeing—after Lafosse. A, B, C, D, and E show lines of adjustment.

It does not, however, and cannot be made to give the requisite power to open the quarters back and outward, should the heels be drawn sharply inward and forward, as shown in Fig. 573, as can be very easily done by the method devised by myself. But this method of treatment is so simple and good that I have thought it advisable to give very careful drawings of it. This spring of different sizes and strength, with all particulars, can be obtained by addressing the patentee, Mr. Roburg. I also give illustrations

of a form of shoe devised and largely used by him with great success, the form of which can be well understood by them. The object to be attained is, where there is a want of mobility, or much soreness and inflammation, to so form and adjust the shoe that the foot will partly roll upon the ground and relieve the strain. This form of shoe has been patented by him. To use Mr. Roburg's words, "This shoe, by allowing the foot to roll upon the ground, gives the foot the advantage of an extra joint, and to that degree relieves the strain or want of mobility, which causes lameness or soreness." Consequently it not only enables the horse to travel easier, but aids in

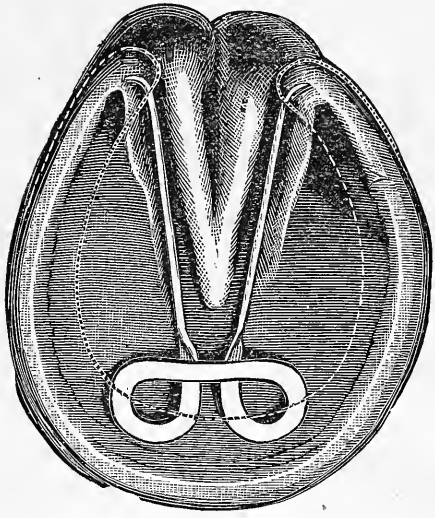


FIG. 522.—An outline of spring, with its position on the foot.

FIG. 523. Thickness of the spring—full size.

FIG. 524. Width of bar—full size.

making a cure. This principle of treatment he has studied very closely and is remarkably successful. More special reference will be made to this in Navicular-joint Lameness.

This principle has long been in vogue in France. I give an illustration from Lafosse, showing a side view of the hoof fitted for the shoe ; also a specimen of the French shoe. The principle is to turn up the shoe at the heel and toe about the thickness of the iron. Mr. Roburg's shoe differs essentially from this, in that he gives a curvature side-ways as well as with the length of the foot. What he terms his "best model of shoe," and which is the most unusual, is Fig. 525, which is nothing more than a thin plate hammered into a rounded or bowl shape, the exact proportions of

which are preserved in the drawings given. Fig. 526 is a side view which will give a good idea of the relative proportion of the curve. By this form of shoe the foot has perfect freedom of motion either way. If the foot is feverish or dry, a wet sponge or oakum is pushed in between the shoe and bottom of the foot. Fig. 529 is a view of the same made a little heavier, the same form of circle being preserved, with the difference of the central part being removed with cross-section of the same. The shoe from which this drawing was made was claimed to be the same that was worn by Dexter when he made his fastest time to road wagon. Figs. 531, 532, show the method of putting on calk-ins.

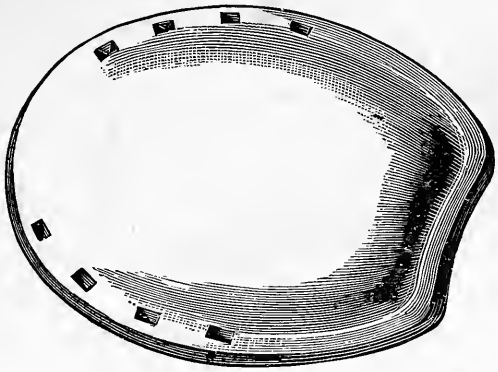


FIG. 525.—Roburg's best form of shoe to aid the mobility of the foot in lameness.

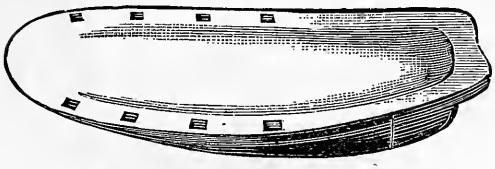


FIG. 526.—Side view of the above, showing the curve.

QUARTER-CRACK.

This is the one difficulty next to contraction which seems to have baffled the skill of the best veterinary authorities and horsemen to prevent or cure; because in extreme cases they had no practical treatment beyond that of a bar shoe, cutting away the horn so that the part back of the split would have no bearing upon it, or of sup-

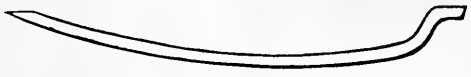


FIG. 527.—An exact scale of the curve of the shoe.

FIG. 528.—Cross-section of the same.

porting the weak parts by drawing the edges together with nails, or fastening on a plate with screws; all of which are merely palliative, and not to be depended upon. It would, of course, be easy to grow the foot down by keeping the horse in a stall or small yard where the ground is soft, but when put to work it would be liable to split down again as before. Consequently it has been one of the most vexatious and annoying of difficulties, because to to do this it was necessary to keep the horse idle from three to six months; and then, when put to work, if by chance he were driven sharply over hard or frozen roads, the quarter was liable to burst, which would again make the loss of use necessary. Or it became necessary to resort to the palliative measures referred to, and thus in time the value of an otherwise good horse would be destroyed.

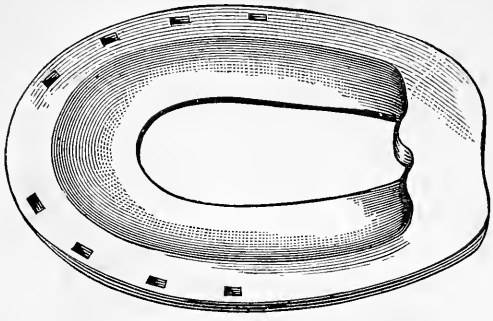


FIG. 529.—Ordinary form of rolling motion shoe.

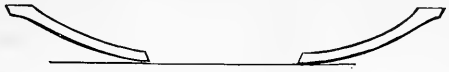


FIG. 530.—Cross-section of the same.

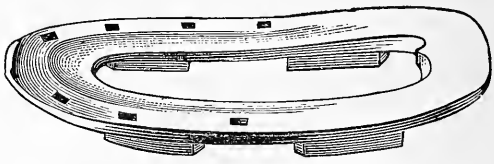


FIG. 531.—Side view showing degree of curve.

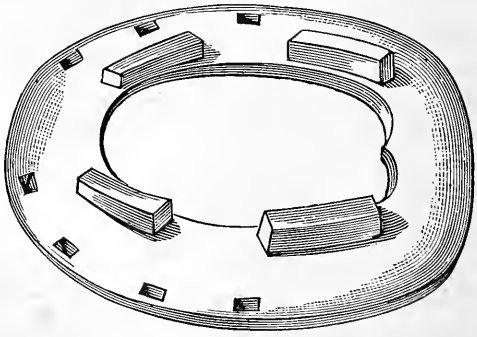


FIG. 532.—Ground surface of above, showing method of putting on calkins.

We see, in the first place, that the whole trouble arises from the hoof becoming contracted or too small for the internal parts. This will be most noticeable

at the inner quarter by the wall becoming straight or drawn in sharply a little below the hair, the part at which the split invariably occurs. This is proved by the fact that the quarter is most liable to burst or split when the hoof is dry and hard, or when concussion is increased by driving on hard roads. This tendency to split is also increased by the inferior quality of horn grown; because the contraction of the parts, or pressing of the wall in against the soft parts so obstructs the circulation that there is not sufficient blood to grow a sound, tough, healthy horn. On this account in all such cases, if serious, the horn grows thin and brittle. The only reliable and practical cure is opening the quarters sufficiently to remove pressure until the new horn is grown, which can be done to any degree desired as follows: First, cut down between the bar and frog of the inner quarter, as explained for contraction, until it will yield readily to pressure. Next cut away the edges of the wall to the end of the split; then make a crease with the firing iron at the edge of the hair. If the split extends well up into the coronary band, this can be omitted, and instead, the iron touched length-ways with the split. If, however, the quarter is properly opened, such interference with the firing-iron will be unnecessary, as the horn would usually grow down sound without it. Now fit a shoe as explained for contraction, putting a clip only upon the inner side (as shown in Fig. 536). The opposite side is to be nailed well back to counterbalance it. When the shoes are nailed on, with the spreaders open the quarter all it will bear without producing soreness, or about a quarter of an inch. This done, fill the crack with a little melted resin or tallow, over which put a little tow to prevent gravel or dirt from working into the quick. It is next advisable to stimulate the growth of tough, healthy horn. This can be done with hoof liniment, which should be put on as explained, two or three times a week. In addition, the hoof should not be permitted to become dry or hard, which can

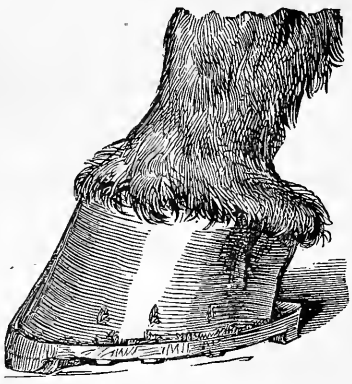


FIG. 533.—Quarter-crack.

be easily prevented by stopping with flaxseed meal, and tying two or three thicknesses of blanket around the feet, and keeping wet while standing in the stable. The horse, if necessary, can be put to work as usual. In the course of a few days, spread out a little more, or as may be necessary to make the hoof sufficiently large to remove all pressure from the weak parts. When grown down, the cause is removed, first, by the quarter being opened out to its natural position, thereby removing all pressure upon it outwardly; second, by the circulation now having entire freedom more blood is brought to the parts, so that there is grown a tougher and thicker quality of horn, thereby making it a reliable cure.

FIG. 534.—Toe-crack.

FIG. 535.—Quarter-crack.

If an ordinary case, with but little drawing in of the quarters, simply lower the inside quarter a little so as to remove pressure from the upper edge of the wall, and put on a level shoe. Next, with a firing-iron, burn a slight crease across the upper edge of the wall, keeping the foot soft, and stimulating the growth by applications of hoof liniment. This will enable growing the wall down without its splitting back. But if the quarter is drawn in perceptibly, then in addition to the creasing, the quarter must be given entire freedom by cutting down between the bar and frog.

The advantage of a bar-shoe is that it brings some pressure upon the frog, causing a slight spreading of the quarters, and giving relief; but, as must be seen, in its best form it is merely palliative, as the frog soon becomes atrophied by the pressure. But if the hoof is thin and much contracted, and especially if the growth of horn is not very healthy, nothing short of opening the quarter and keeping it so can be relied upon for success.

Blind Billy, on account of the severity with which he brought the feet to the ground when traveling rapidly, frequently burst the quarter of one of his feet which grew white horn and was contracted a little. By weakening the horn between the bar and frog so as to let the quarter give as pressure was thrown upon it, in connection with keeping the feet soft and stimulating the growth

with hoof liniments, enabled growing the wall down several times without resplitting. Finally, during a severe freezing spell, when the roads were rough and hard, the quarter was split very seriously, which, on account of the thin condition of the hoof, it became impossible to grow down again without its splitting back. All palliative measures failing, it became necessary to either control the quarter while growing, or in consequence of the serious lameness the injury caused him, to take the horse off the road. This was not admissible, as he could not be spared, and to prevent this I was compelled to devise some means of treatment by which this could be remedied. I noticed first that the whole trouble arose from the quarter being too small, or pressing too much upon the internal structure, and it occurred to me to open out the quarter and hold it there. The experiment was made, fitting the shoe with a clip, and it worked perfectly. The horse was driven as usual, over the hardest roads, during the balance of the winter; yet the hoof grew down, not only sound but stronger than it was before. The incident suggested the idea of fitting a shoe in this way for the cure of contraction; and for the convenience of opening either quarter as desired, the spreaders were devised, which enabled doing this most perfectly.

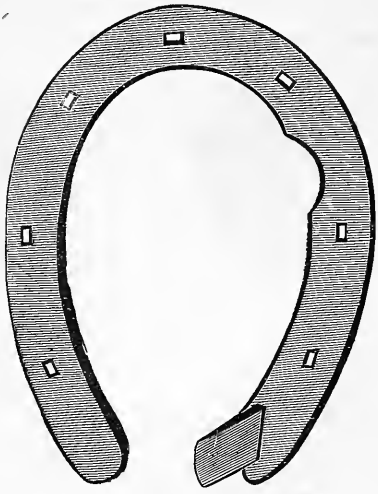


FIG. 536.—Form of shoe for quarter-crack.

CORNS.

Corns are usually to be found at the inner heel, or at the angle between the bar and the crust, and are caused by the shoe pressing upon the part. This will be most likely to occur should the wall break down, or be cut away so much as to let the shoe rest upon the sole, or should the shoe be nailed well back on the outside and toe, as then, if left on too long, it will be drawn outward and forward so much that the inner heel will be drawn

under the quarter, and rest upon this part, bruising it. When the sensible sole is thus bruised, the effused blood mixes with the horny matter and makes a red spot, and if the irritation is continued so as to produce very much inflammation, ulceration may take place, which would, in some cases, be sufficient to affect the inner wing of the coffin bone, and cause matter to break out at the coronet. Sometimes when the quarter is very much contracted the space between the bar and quarter being greatly lessened, it causes such bruising or pressure upon the soft parts as to excite inflammation, or a corn, which, in some cases, may be very serious. The usual remedy is to cut away the parts so that the shoe will not rest upon it, and put on a little caustic, or touch it with a hot iron, which destroys sensibility, and changes the condition of secretion. Butter of antimony, or salts of nitre, is the favorite remedy; then melt in a little tar, resin, and tallow, and cover with a little tow to prevent gravel or dirt working into the tender part. The usual way, in severe cases, is to put on a bar shoe, so as to enable removing all pressure from the part. This mode of treatment, however, as usually done, is only palliative, not curative. The horse will travel better, but if the shoe is left on a little too long, or presses upon the part in the least, or should gravel or dirt accumulate between the part and the shoe, inflammation and lameness will follow. The only remedy for this is to remove the pressure. But in time by this treatment the difficulty is only aggravated and made worse. Hence, the usual assertion that "corns cannot be cured."

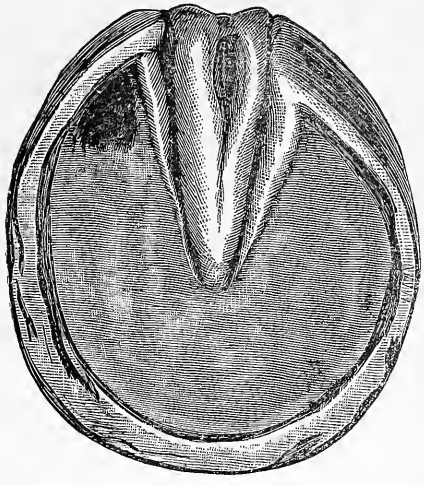


Fig. 536.—Gifford's foot, as it appeared before treatment.

The writer will now explain how corns may be cured without difficulty: The black performing horse, Gifford, one of his former

team of horses trained to drive without reins, had a very bad bruise (corn) on one of his inner heels, which, if not carefully attended to, caused serious lameness. After being troubled with it about seven years, it had grown to such proportions as to involve the entire angle at the heel, so that the horn was broken quite through, and the sensitive structure partly ulcerated. At the close of the season's business, early in June, there was considerable inflammation and soreness in the entire foot, in consequence of the aggravated condition of the corn, despite the fact that all pressure had been carefully kept from it. All palliative measures having failed, it occurred to the writer to try the experiment of removing all pressure from the part, and turning the horse to grass during the summer months. But there was another serious difficulty, to which, in part, some of the soreness might be attributed. By the contraction or curling under of the outer heel, it had become so weak that it could scarcely be made to support his weight in traveling, so it was decided to treat this at the same time. The division between the bar and frog of this side was well thinned out to make the quarter flexible.

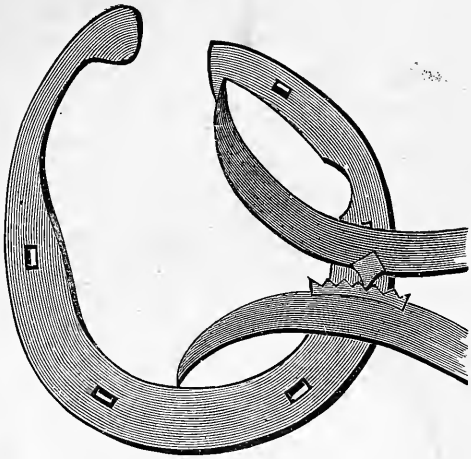


FIG. 537.—Position of spreaders for opening quarter.

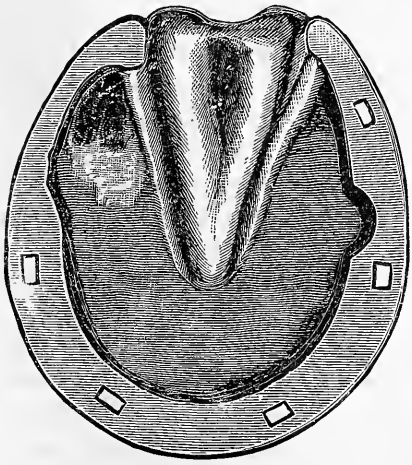
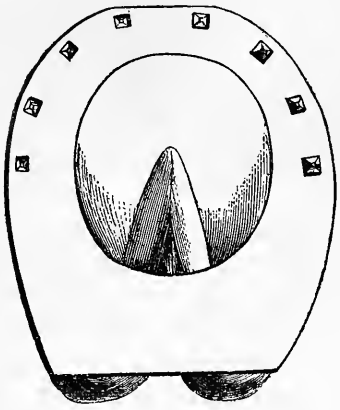


FIG. 538.—The shoe as it appeared when on, with the outer quarter opened out.

Next, a thin shoe of untempered steel, a little more than an eighth of an inch thick, was made to fit accurately to the wall (as shown by Fig. 537), the end being turned up for a clip, and fitted nicely to its place. The part of the opposite heel of the shoe coming over the corn, was entirely cut away, leaving simply sufficient to cover the wall, which at this point was very thin. The shoe was now fastened on sufficiently to hold it firmly in place, but with very small nails. There was no rasping or attempt to beautify the foot in any way. This is never in any case permitted by the writer in shoeing his horses.

Figs. 536 and 538 give a very good idea of the appearance of



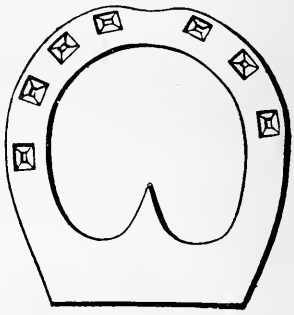


Fig. 539. Best forms of bar shoe. Fig. 540.

the foot before and after the shoe was put on. The quarter was now carefully opened back about three-eighths of an inch, without causing any irritation. Nothing was put over the bruise or corn, nor was it meddled with in any way. The horse was now turned out to grass daily. At first he moved very tenderly, though not lame. In a week the heel was again opened a little more, and again at intervals until opened out as desired. In a few weeks the tenderness, fever, and inflammation subsided; and at the expiration of three months the corn was entirely cured, there being a healthy growth of sole over the part, leaving only a slight touch of redness on account of not being entirely grown out. The contracted quarter was also out in its natural position, the change for the better in all respects being very gratifying. An ordinary flat

shoe was now put on, when he traveled as well as ever. Most of such cases can be easily cured while the horse is kept at his usual work, by putting on an open shoe if the foot will bear it, if not, a light bar shoe, with the part coming under the corn entirely cut away, leaving only sufficient to cover the wall. It will not matter whether the bar is cut away or not, as there will be nothing over it to harbor gravel or dirt. It would be advisable to fit the shoe carefully, or even drive two or three nails, to know exactly the position of the shoe upon the wall. Then mark the part to be cut out, when the nails can be pulled out, the part cut or filed away properly, and the shoe again nailed in place.

FIG. 541.—Shoe fitted for curing corns. From Coleman's work.

The success in the treatment of the case referred to led me to believe I had made an important discovery, as I had not found it laid down by any of the ordinary authorities on "Shoeing," under my notice. Since then, upon investigation, I have found that the principle was well understood by many old authorities, though the method of treatment, as will be seen, was slightly different.

Page 96, of Freeman's work on "Shoeing," published in 1796, says :—

"I have frequently bought horses whose feet, on examination, proved to have corns, occasioned by ill-made shoes having pressed upon them. These were, in general, easily cured by paring the feet properly where the grievance lay, and turning the horse out without shoes for two or three months."

In the supplement to Coleman's work, published in 1802, the writer found, for the cure of corns, the shoe cut away over the corn, (see Fig. 541).

Bracy Clark's work, in 1809, for the cure of corns, gives an illustration of a shoe with that part which would come over the corn entirely cut away. The half-moon shoe, or tip, by Lafosse referred to hereafter, is claimed to cure corns. Cæsar Fiaschi, of the 16th century, gives a cut of a three-quarter shoe; almost the same form as that of Bracy Clark's, for this trouble. White's work, published in 1820, says :—

"The only thing to be done is to take off the shoe and turn the horse out to grass. In slight cases, however, this may not be absolutely necessary, and is often inconvenient, but it is by far the best plan, and, I may add, *perhaps the only effectual one,* when a radical cure is desired."

This writer being good authority, I will include what he says on direct or palliative treatment :—

"When a horse cannot be sent to grass, and the disease is so slight as not to produce lameness, let the affected heel, crust as well as sole, be rasped or cut down with the drawing knife, so that when a bar-shoe is applied there may be no pressure upon the affected heel, or about an inch beyond it, that is, toward the toe. . . . The practice commonly is to scoop out the reddened sole or corn between the bar and crust, and have these receive the bearing of the shoe ; but this will not do ; the crust also must be removed as well as the bar to the depth of a quarter of an inch. . . . Caustics and even a hot iron have sometimes been applied to corns; they may have had the effect of deadening the feeling of the part for a short time, but they often do great mischief, and should never be employed or permitted in any case of corn whatever. Tar ointment, Friar's balsam, or a solution of blue vitriol have also been used.* They may be innocent, but certainly not necessary. When corns are not attended to, severe lameness is often the consequence. Smiths frequently do nothing more than scoop out the corn, and apply a common shoe. This sometimes relieves the horse for a short time, but he soon becomes lame again, and generally lamer than at first. It is in this way that corns are rendered troublesome, and productive of so much inconvenience. Inflammation and suppuration are thus sometimes induced in the heels, and matter breaks out at the coronet. In this case the whole of the affected heel must be removed, even the crust of the heel and the bar ; and when the part has been well soaked with a poultice, that is, after a few days, it may be dressed with tar ointment, and about a week after it has been thus dressed, the horse should be turned to grass without shoes."

Weak Heels.

If from any cause there has been much fever in the feet for some time in consequence of being driven on hard roads, or being partially foundered, there will be diminished supply of horn, so that the wall will not only grow slower but thinner. See reference to inflammation and Figs. 505 and 506, on page 677.†

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*Formulas for these prescriptions will be found among miscellaneous recipes.

† According to scientific authority, ordinary inflammation of the horn-secreting surfaces gives a greater cell proliferation in general; but when inflammation ap-

Sometimes the heels are cut down so closely that should the shoe work loose, and wear or break down the quarters, it would be easy to produce a weak, low condition of the heels. This may cause a great deal of trouble, on account of the slowness with which the horn grows to supply the increased wear. This morbid condition of inflammation also produces another very marked effect, namely, that of separating the wall from the sole, or what is termed becoming shelly. Sometimes, if the shoes are badly fitted and made too wide at the heels (as explained under the head of Contraction), they will soon cause a weak, bad condition of the heels, the quarter gradually giving way or breaking down, and if the foot is at all flat, the sole and frog become liable to settle, or are made convex.

FIG. 542.—The foot as it appeared.

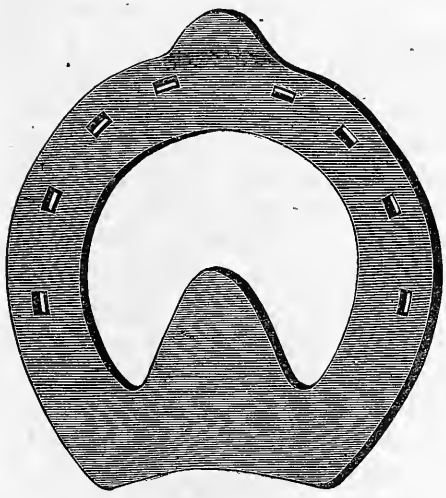


FIG. 543.—Form of shoe the writer would advise.

One of the most marked cases of this kind the writer ever saw was that of a cart horse, brought to his

proaches the suppurative stages, death of the horn occurs. But atrophy, or wasting of the secreting structure, gives a corresponding atrophied portion of horn-structure.

notice in Central Pennsylvania. The feet were broad and flat, with the heels drawn in to a point so that there was scarcely any bearing of them upon the shoe. The result of this was that the horn wore or broke away until the line of bearing was over an inch above that of the frog. To remedy the difficulty, the calks were raised correspondingly high to keep the frog from the ground. (See Fig. 542.) This horse traveled with great difficulty, even on a walk.

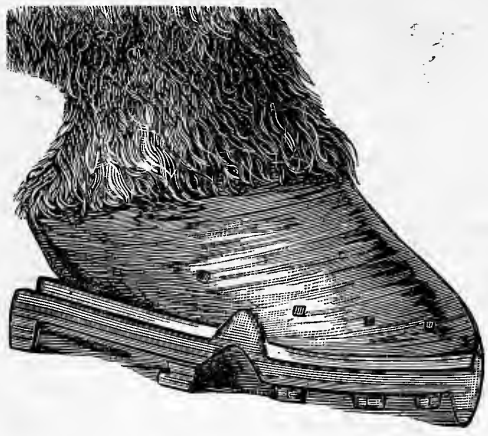


FIG. 544.—The shoe as it may be fitted to support weak heels.

If it is desired to restore the condition of the circulation and quality of horn, by far the best way of doing it would be to put on thin-heeled shoes, with iron just wide enough around the quarters and heels to protect the wall, and then turn the horse out for a few months. In the meantime, dress the feet two or three times a week with hoof liniment to stimulate the growth of good horn, and prevent the weakening effects of too much moisture. If, however, the feet are weak and the horse must be used, a better way would be to put on a thin bar shoe, the bar part extending well forward under the frog, to give more basis of support. (See Fig. 543.) Of course nothing more should be cut away from the heels than is sufficient to barely level them a little. Especial care should be taken to protect them from excessive wear and breaking down by the shoe, which may be done by placing leather between the bearing surfaces of the foot and the shoe. The better to support such a shoe and lessen the nailing, a light clip may be turned up on each side. In many cases of this kind the horn may be very brittle, so that it is not only advisable to use small nails, but to drive them where a strong hold can be taken—anyway, the shoe must be fastened on so firmly that it will not get loose or work on the foot. In some cases it may be necessary to

bend the bar down, so as to enable a more accurate line of adjustment to the wall and frog. If an arch becomes so weak that it settles under the weight upon it, the only safe or reasonable alternative would be to support it. In like manner, when the sole becomes so weak that it settles down, it must be given contact with the ground, or supported by the use of a bar shoe.

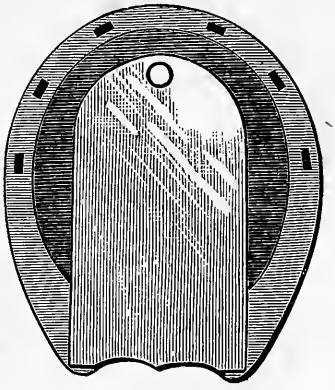


FIG. 545.—Original shoe fitted with plate on.

When in Massachusetts, in 1876, a leading horseman called my attention to a fast-trotting stallion that had weak feet, and which caused him a great deal of trouble. He wished to know how to shoe them so as to improve their condition. I found the feet in good shape, but the sole and wall were very thin and weak, the effect, undoubtedly, of the horse being slightly foundered or overheated. I advised putting on a shoe that would support the sole and frog, the space between the shoe and frog to be packed with oakum, and the use of hoof liniment to grow a tougher and better condition of horn. He objected, that this would not do, as the horse would not bear any pressure at all upon the sole. Some time afterward my attention was called to a very high indorsement from this gentleman, of a certain form of patent shoe, that had been used on this horse. It stated that it enabled the horse to travel as well as ever, and that its utility was all that could be desired. I was interested to know just what kind of a shoe had been used, and when again in that vicinity, at considerable trouble found one, of which I give an accurate drawing. (See Fig. 545.) While it may be evident that in many such cases the shoe could

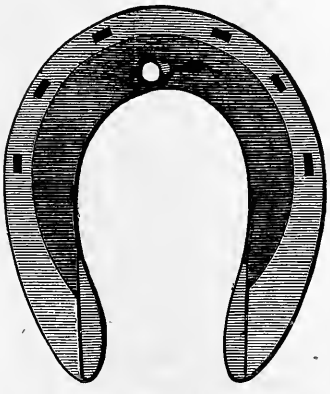


FIG. 546.—The same with plate removed.

be made to support the entire sole, if hammered out of iron, the increased weight would make it seriously objectionable. The fitting of a thin piece of steel plate, as shown in Fig. 545, would enable this to be done with but little addition to its weight. The manner of putting it on was simply by bringing the whole surface of the wall and frog to an even bearing, to which the shoe was carefully adjusted.

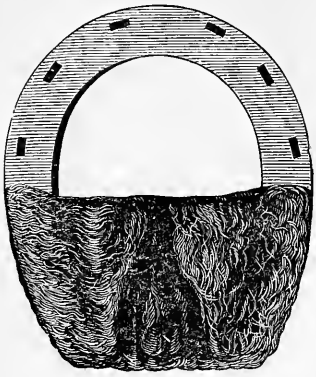


Fig. 547.—Heel of shoe with pad of oakum attached.

Next, the space between the shoe and bottom of the foot was filled with oakum, to which was added a little tar and resin, so as to form an even but firm support all the way round.* The drawing of the oakum, as it appears in Fig. 547, is an exact illustration of that which was used upon the shoe named, though only the back part of it is shown. Parties who had used the shoe upon feet which had become sore and tender from driving upon hard, stony roads in the city and neighborhood, stated that it enabled the horses to travel much better. If the foot is sore and sensitive, supporting it with a bed of oakum in this way, will serve to break concussion, and consequently make the horse go better for a time. But for contraction, quarter-crack, coffin-joint lameness, etc., for which it was advertised as a cure, it cannot benefit beyond the effect of slightly breaking concussion as explained. It would be just the thing for weak heels and for any condition where the sole and frog

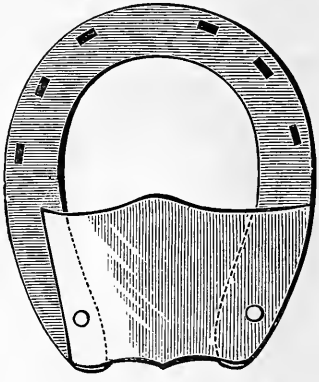


Fig. 548.—The plate as attached.

* A preparation of tar, beeswax, hard soap, and resin, melted and formed into a salve, to be used with oakum as a packing, was given the writer by a horseman of much experience, as the best for this purpose, claiming that it softened the feet and stimulated the secretion of horn.

need supporting. As it is, however, seriously objectionable to cover the whole bottom of the foot when it can be avoided, I include cuts of an improvement by which the whole bearing surface of the frog and heels, the important parts, can be supported without the sole being excluded from moisture or air, which is important for the secretion of healthy horn. In such a case, if desired, the plate instead of being let to the inner edge of the bar (which is mainly made so in the cut to give it a more distinct appearance), can be extended across the quarter, so that the upper surface will come even with that of the shoe, and be riveted on.

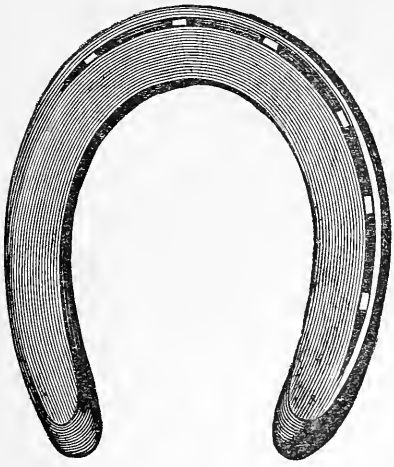


FIG. 549.—Forward shoe to prevent striking. From Dr. Hamill's collection.

The main point in the management of interfering is to have the shoe close under the wall at the point of striking, and the offending part shortened or straightened a little, and that there be no nails driven there, the clinches of which would soon rise and cause cutting. The edge of the shoe should be beveled under a little, and filed smooth. There is usually a good deal of carelessness in letting the shoe extend outside the crust at the point of the heel. It should set well under the wall all the way round, and the wall filed smoothly to it. In addition, in some cases the horse will travel better to lower the inside heel a little, in others to raise it. It is in all cases advisable, however, if the horse can be made to travel without striking, to keep the adjustment natural by paring the foot level, and making the

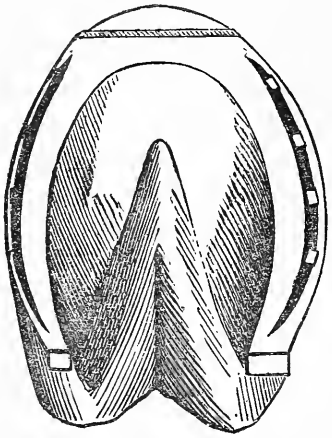


FIG. 550.—Shoe to prevent interfering and clicking.

shoe of an equal thickness all the way round, with perhaps the inner part straightened a little. Raising the inside heel, which is the method in general use, while it tends to throw the ankle out, tends also to throw the foot in, as it is carried forward. It also brings such unequal strain upon the ankle joint as to sometimes cause serious injury to it. Fig. 552 is introduced to show the bad effect of this. The inner condyle of the joint is worn down or eroded over one-eighth of an inch, and, by its friction, cut in through the cartilage of the opposing part so as to conform to the angle shown in the bones as represented. There is also a large accumulation of bony deposit on the outside, grown by the inflammation excited, showing the extremely bad effect of forcing an unequal bearing on the joint, and throwing the foot out of line.

FIG. 551.—The shoe as sometimes formed to prevent interfering.

Sometimes colts driven to a sulky, when a little leg weary may strike badly; in such a case the ankle must be protected. In all cases when the ankle is cut, the swelling and soreness increase the difficulty, and should be guarded against by covering. If the irritation is kept up, and this is not done, it may result in permanent enlargement of the part, which would afterward increase the liability to be hit. This can be prevented only by coverings, or by being protected by the ordinary simple means, until the inflammation subsides and the injury heals. I include here Prof. McLellan's directions:—

"Treatment for interfering, to be rational, must take into account the causations. Thus, if the toes turn out—a very common cause of interfering—they should be inclined in all that is possible. This can be accomplished by bending the outside web of the shoe from its inner to its outer border, making the edge through which the nails are driven, quite thin. Or if calks are used, the toe calk can be welded nearer the inside than the outside toe, and the toe calk beveled at the expense of its outer extremity. If the knee is banged, but light shoes are indicated. Lightness in the shoe is always desirable in the hind feet, and if the season of the year permits, tips will be found very effective in prevention of interfering.

The nails should be left out of the hoof at the point where it strikes, because the clinches are liable to become raised or loosened, and do injury."

Clicking, or Overreaching.*

"This is a term applied to the striking of the hind shoes against the forward ones during progression. It may be due either to a faulty conformation, to weakness, or to disease. In seeking to remedy the defect, we must endeavor to discover its cause. If it is due to defective form, we may so adjust the hoofs and apply the shoes that the feet shall be placed upon the ground in such relation to the body as to modify in some measure the fault of form. In some cases the toes of the forward feet must be reduced all that is possible, and the toes of the hind feet lengthened. In others, weights or heavy shoes upon the forward feet answer a good purpose. In some, weights upon the outside of the hind feet overcome the difficulty.

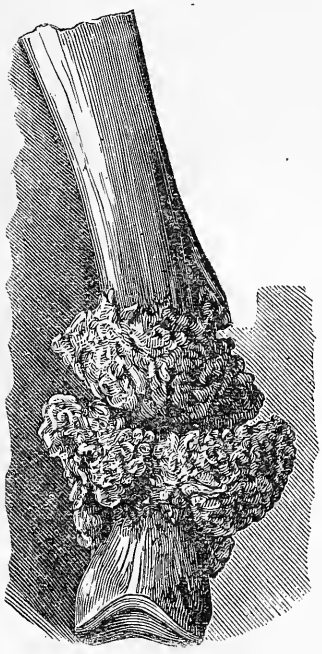


Fig. 552.—Effect of injury caused by interfering. From a specimen presented by Prof. Cressy, of Hartford.

"If the hind feet are placed upon the ground well forward when the animal is at rest, heel calks of extra length will be found useful.

"Weakness, as a cause of clicking, is shown in colts and in horses that have diseased hind feet. In the first, the animal is not able, or has not learned, to dwell upon the hind foot to give to the body that forward impulse that comes from the *long push;* in the second, pain prevents the extension. In the case of the colt, shoeing must be supplemented by good driving,—the animal should be kept up to the bit, and the head well checked up, and should not be fatigued by over-driving. In the case where the clicking depends upon a diseased condition of the foot or leg, the removal of the cause is the indication. As general rules for the prevention of clicking, the toe of the forward hoof should be reduced all that it will bear; the shoe should be short, both at the toe and heel; the heels of the shoe should be beveled at the expense of its ground surface; when the toe should be beveled, giving the shoe, when applied, the appearance of one partly worn. In many cases concaving the ground surface of the shoe is useful. If the toes are

* Contributed by Prof. McLellan.

long and the heels extremely low, thick-heeled shoes or heel calks are indicated.

"The hind shoes should be light and long at the heels, giving the heels of the shoe as wide a bearing as possible. In case the toe of the hind foot is much worn, and as a consequence the hoof spread at its plantar surface, clips should be drawn up from each side of the shoe, so as to grasp the wall at its widest part. No attempt should be made to fit the shoe to the squared and shortened toe; but give it the natural form, and let it project at the toe to that extent that would indicate the length of the hoof were it unworn. Heel calks upon the hind shoes are applicable to nearly all cases.

"In all cases of overreaching or clicking, adjusting the hoof and shoe so that the inside quarter and toe of the hoof are higher than the outside, will assist in overcoming the difficulty."

Stumbling.

"Stumbling is usually associated with some diseased condition of the foot. In the prevention of this disagreeable and dangerous habit, particular attention must be given to cutting the hoof. Reduce the hoof all it will bear without injury; see that the hoof is of equal depth on each side of the toe. This you can ascertain best by standing in front of the horse and comparing the two sides. In fitting the shoe, bend up the toe, giving it the rounded appearance of one well worn. If calks must be used, weld toe calk back to inner margin of web, making it low. In the stable use wet swabs to the feet."

Shoeing Sore or Tender Feet.

It is very important in shoeing sore or tender feet to enable the horse to travel with the greatest comfort and ease. As will be found in "Navicular or Chronic Lameness," much depends upon the method of shoeing in producing favorable conditions, which should be studied in connection with this explanation. Should a horse show increased tenderness or soreness while driving down hill or over rough, stony roads, at times "crimpling" badly, going better on smooth, soft, or sandy roads, and with the shoe worn perceptibly more at the toe than at the heels, first see whether there is any contraction at the inner or both quarters, with the hoof looking rather hard and glossy (usually one foot only will show this condition, and may be correspondingly tender or lame). Also see whether the lameness came on suddenly or gradually. If

suddenly lamed, it is probably caused by straining the coffin-joint, which would be indicated by its being unable to bear pressure upon the frog. In such a case the horse go decidedly worse on rough, stony roads or down hill, where there is liability to severe incidental pressure being brought against the frog. For such a condition of lameness, the shoe should be made with high heels and rounding toe—no toe calks. The calks should be gradually shortened as there is improvement. If the lameness came on gradually, and especially if it set in at a time when the feet were very dry and hard, it was probably caused by some slight inflammation, the result of contraction and fever; because when the feet are very dry and feverish, the hoof becomes smaller, causing increased pressure upon the soft parts and lateral cartilages. There may be also some inflammation or a morbid condition of the coffin-joint. If any contraction is noticeable, the feet should be softened and treated as explained under that head.

FIG. 553.—Form of shoe that may be used.

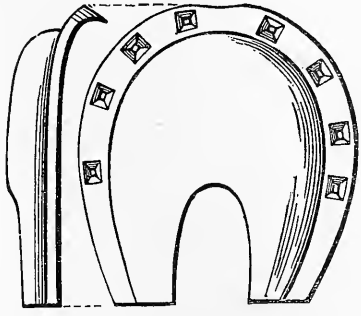


FIG. 554.—Form of shoe for covering a weak, thin sole.

If, however, the object is to shoe the horse for present use, simply raise the heels a little and round the toe. If there is but little soreness or want of mobility, then let the shoe be an ordinary flat one, with the toe turned up like that of an old shoe considerably worn. Great care should be used in taking off and

nailing shoes on such feet, not to wrench or hammer the foot heavily. In winter, if calks must be used, let them be arranged something like Fig. 553; or a low, long calk can be put on well back under the toe. In taking off the shoes, the clinches should be carefully raised, and the nails, one at a time pulled out. In nailing on, the strokes should be light, and the clenching barely sufficient, by repeating light tappings, to turn over nicely. Anything in the way of hard, tight nailing should be avoided. The shoe should be simply held nicely in place without being pulled tight.

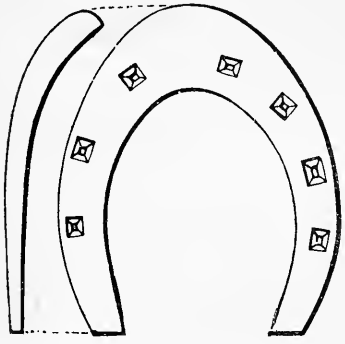


Fig. 555.—Adapted for a hind foot in aiding mobility.

There are a great many pads and cushions advertised for tender feet. If rubber pads be put over the shoe, it is seen, in the first place, that nailing on the shoe and turning down the clinches sufficiently tight, presses it down so closely as to take out all its elasticity ; in addition, the heels soon wear and cut through it to the shoe, so that they can have but little, if any, effect in relieving concussion. Leather well fitted between the shoe and foot will, in many cases, help considerably. I have found that making the heel-calks rather low and sharp, and the toe-calks well back about the middle of the bar, greatly helps in breaking concussion on mud roads ; as by their setting into the ground the force of the blow is much lessened.

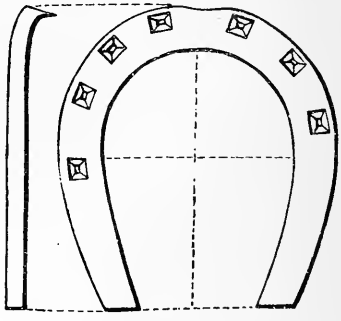


Fig. 556.—Form of shoe with toe simply rounded.

A great many shoes have been devised for the purpose of relieving concussion ; but practically they have proved of but little or no value. The most successful way has been to fit two thin plates with rubber between them, but it proved too expensive and complicated to come into general use. (Prof. Going's Patent

Rubber Shoe.) A common method practiced by many shoers is to spring or bend the shoe off from the heels, with the belief that it must relieve them. (See Fig. 558.) This is objectionable, because it transfers the bearing from the natural position of the heels to parts least capable of receiving it, multiplied with such leverage upon the wall where the shoe is bent off, as to cause severe pain. It also soon breaks down the quarters so as to work upon the shoe, thereby becoming an additional source of weakness and injury.

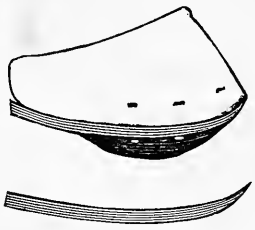


FIG. 557.—Shoe adapted for a stiff joint.

SHOEING FOUNDERED HORSES.

If the mobility of the foot is destroyed, as the result of chronic founder, or other cause of morbid inflammation, mobility must be aided by rounding the entire shoe or toe. If the foot is entirely stiff, the shoe must be so formed that it will roll upon the ground, which can be easily done by leaving the inner edge of each side wide, and turning down in a half circle, as shown in Fig. 557.

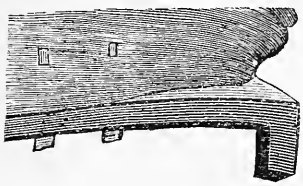


FIG. 558.—Shoe raised from the heel.

If the sole is broken down, or the wall separated at the toe, the result of acute inflammation or founder, weight will be thrown more upon the heels. For such cases the shoe must be so fitted as to extend well back under the heels, and if the sole is very thin at the toe—bulging down—it may be supported by letting a thin flange of iron extend well back under it, or fitting a steel plate across the part so as to give an even support all the way round, and the adjustment made easy by packing with oakum, though in most cases the sole will not bear pressure, and is simply to be protected by a wide shoe. The shoeing of such feet must be in a great measure experimental; consequently the ingenuity of the owner or smith must be exercised

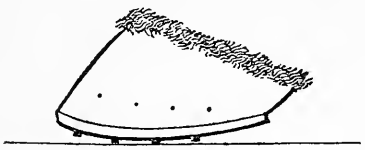


FIG. 559.—French shoe for aiding mobility.

to conform with best advantage to the condition of the case. First, do nothing that will irritate or make the foot sore. It simply must be supported to the best advantage, and the mobility aided by rounding the toe, or setting the calks well back under it, as shown by Figs. 531 and 553.

EXTRACTS FROM STANDARD AUTHORS.

This chapter would be incomplete without reference to a few authorities, showing the bad effect of paring the sole and frog excessively, rasping the outer surface of the hoof and the use of thick, badly-fitting shoes. I will call attention first to the most prominent authority, Prof. Coleman, from whose teachings all the modern works in this country have been principally guided in their instructions. In January, 1792, a Veterinary College was started in London. A short time afterward Edward Coleman was appointed Chief Professor. I cannot do better here than copy from Prof. Gamgee's work on "Shoeing," published in London in 1874, in relation to Coleman's teaching. He says :—

"In England, since Prof. Coleman ruthlessly destroyed the empirical knowledge of the old masters, and substituted for it a system of fantastic and often cruel notions, we have been a prey to endless speculative theories. The result is that with the best horses in the world, we have a far larger proportion of lame ones than are to be found in any other country. . . .

"It was a kind of teaching on the foot and on shoeing that did the incalculable and, I fear, almost irreparable damage which has brought suffering on horses and shortened their existence, which has spoiled farriers by leading them astray on false pretexts, and has entailed discredit on the English Veterinary School. . . .

"One change, among others introduced by Mr. Coleman, has entailed, I believe, a more lasting damage on the art farriery than any of his many other crochets, which have unfortunately become thoroughly parts of English horse shoeing. He introduced the drawing-knife, and made it supercede the buttress for preparing the feet for shoeing. The buttress is the instrument still in use for paring down the wall surface to receive the shoe every where except in England and parts of the New World, to which English hands and language have carried our modes of shoeing, such as it has become only within the present century.

"Old men can remember the buttress being in general use throughout Great Britain ; but the way it was banished from English practice is known to few ; and its supercedence, and these remarks on the effects of the change, may astonish many. The

drawing-knife, or searcher as it was called, a small hooked, crooked little instrument, was formerly kept for the purpose of exploring wounds and extracting foreign bodies from the foot, and was to that extent in vogue on the Continent as well as in England. But theorizing, and a fancy for a change, led the professor to order the general use of the little hooked knife instead of such a broad, level tool as the buttress. He had unfortunately conceived such notions as that the sole of the foot did not bear the weight of the animal, that it was necessary to pare it thin every time the horse was shod, and that the broad, level buttress was not suited for that; hence the preference for the little scooping, crooked searcher. As these incidents have had a disastrous effect on shoeing, which we have scarcely in any degree begun to relieve, I will quote from Mr. Coleman's work of 1798:—

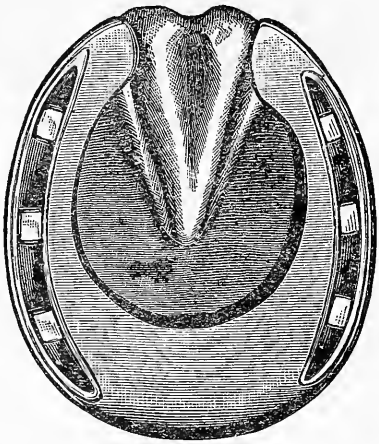


Fig. 560.—Shoe for weak sole, or foundered feet.

"'Those who supposed that the weight of the animal was chiefly supported by the horny sole, have attributed a function to that organ which it does not possess; but, although the laminæ are capable of sustaining the weight of the animal, yet, as they are elastic, and at every step elongate, the horny sole is necessarily pressed down in the same degree, and by first descending, and then ascending, as the laminæ dilate and contract, the horny sole contributes very materially to prevent concussion. This union of the crust with the coffin-bone sustains the weight of the animal; the crust supports the weight even when the horny sole and frog are removed; if the sole and frog in reality supported the weight, then the foot would slip through the crust when the frog and sole were taken away.

"'The sole, frog, and bars were taken away from both the fore feet of a horse; the feet were then alternately lifted by placing the hands on the loins of the horse; he kicked, all his weight was then sustained by the laminæ of the fore feet, and yet this made not the smallest degree of change in the situations of the bones.

"'From this experiment, therefore, it is, that the union of the sensitive laminæ with the horny laminæ is sufficiently strong to support the whole weight of the animal on two feet.

"'The first thing to be attended to is to take away the portion of the sole with the drawing-knife; and to avoid pressure, the sole should be made concave or hollow. If there be any one part of the practice of shoeing more important than the rest, it is this re-

moval of the sole between the bars and the crust. In common practice these parts of the hoof are removed by an instrument called the buttress.

"'The removal of a proper quantity of horny sole has been represented to be a delicate operation, and in the hands of common smiths liable to do mischief. But any smith capable of paring a hoof cannot fail to be equal to removing part of the sole with the drawing-knife. That the practice may be faithfully executed in the army, a farrier from each regiment of cavalry has been permitted to attend the college to learn the practical part of shoeing.'

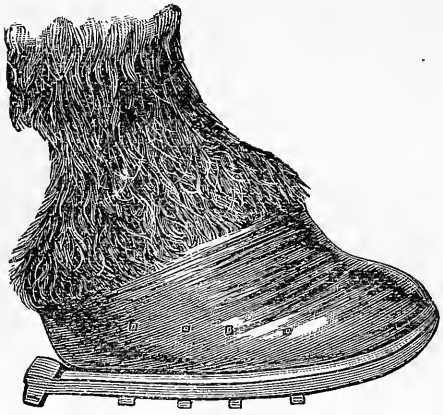


Fig. 561.—Side view of the previous shoe.

"The foregoing passages, abounding as they do in errors, give evidence of the manner in which some of the greatest changes in the practice of horse-shoeing have occurred since its history has been written, and changes which have led to the worst possible results. Once, however, the notion got possession of the minds of the men at the wheel, that the bottom of the foot, its arched sole, was not designed to support the weight, but to yield to pressure downward; everything had to give way to that idea. The sole and frog were torn away, and because, during the barbarous experiment, the connection did not yield, and the bone protrude as a finger through a torn glove, negative evidence was taken in confirmation of the theory framed; the paring away of horses' soles with the drawing-knife was thus established, and the army, by sending farriers to learn the new system, became the means of enforcing the absurd and cruel practice of thinning the sole throughout this kingdom and the colonies."

"It is interesting to see the differently constituted mind of Mr. Moorcroft on the natural bearing of the question in 1800. He says:—

"'The sole ties the lower edge of the crust together, and by its upper part forming a strong arch, it affords a firm basis to the bone of the foot, and by its strength it defends the sensitive parts within the hoof.'

"This is true. We fail to discover a single passage in any work or any traditional account to show that any objection was raised to the continuance of the use of the buttress in England, any more than over the rest of the world, where it had been adopted from time immemorial, until along with his other new theories about

shoeing, Mr. Coleman believed it to be the wrong thing to employ, and then a crooked knife and a coarse rasp were adopted as weapons that might do more destructive execution than the one dismissed."

The writer has talked with several veterinary surgeons of high standing, who think that Coleman did not mean, by the experiment named, to infer that the sole should be cut away to such a degree as to yield to the pressure of the thumb (which is the common rule), but that he wished to prove that it could be done without breaking down the foot ; and that his followers carried it to this extreme, thereby making it the cause of a great deal of harm.

A few paragraphs are also introduced from Youatt and Miles, the most commonly accepted and widely read authors in this country, to show that their principles of treatment are the same, and have been derived from the same source.

"That portion of the horn should be left on the foot which will defend the internal parts from being bruised and yet suffer the external sole to descend. How is this to be ascertained? *The strong pressure of the thumb of the smith will be the best guide.* The buttress, that most destructive of all weapons, being, except on very particular occasions, banished from every respectable forge, the smith sets to work with his drawing-knife and removes the growth of horn until the sole will yield, although in the slightest possible degree, to the strong pressure of the thumb."—*Youatt.*

"It would be impossible to frame any rule applicable to the paring out of all horses' feet, or indeed to the feet of the same horse at all times. For instance, it is manifestly unwise to pare the sole as thin in a hot, dry season when the roads are broken up and strewed with loose stones, as in a moderately wet one, when they are well bound and even ; for in the former case, the sole is in perpetual danger of being bruised by violent contact with loose stones, and consequently needs a thick layer of horn for its protection ; while the latter case offers the most favorable surface that most of our horses ever have to travel upon, and should be taken advantage of for a thorough paring out of the sole, in order that the internal parts of the foot may derive the full benefit arising *from an elastic and descending sole,*—a state of things very essential to the due performance of their separate functions. Again, a horse with upright feet and high heels grows horn very abundantly, especially toward the toe, and is always benefited by having the shoe shortened, and the heels lowered and well pared out."—*Miles.*

George Fleming, who stands confessedly at the head of the

English Veterinary Profession in England, in his work on Shoes and Horse-shoeing, says:—

"By dint of knife and rasp, the dimensions of the organ, the foundation of the edifice, have been greatly reduced, and the animal rests on a narrower basis. The sole has been carefully denuded of its protecting horn, until the thin pellicle of newly secreted material is exposed and readily yields to the thumb. The frog is scientifically reduced on every side, the heels or commissures are well opened up, the bars are reduced in size, and fantastically delineated, and the portion of the crust between them and the seat of the corn—as carefully carved out *a la Miles*. The plantar surface of the foot altogether is much more concave than it was previously, and it looks like a master-piece of workmanship. It may present something like the shape, when prepared for the shoe, seen in Fig. 562.

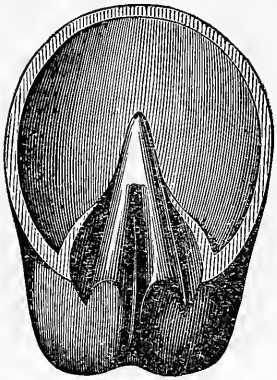


Fig. 562.—Foot excessively pared.

"A shoe is then fitted to the foot. In all probability it is then too small; it has a wide, flat ground surface, the foot surface has a plane border on which the crust rests, and the remainder is beveled to avoid contact with the abnormally thin sole. When this metallic plate is fastened on the hoof, and the horse once more rests on the limb, the foot has no longer its natural bearing. The whole weight of the horse, as well as any other weight he may have to sustain on his back, is borne by the crust of the foot alone. The frog is elevated above the ground, and the sole dare not come near it. In fact, the shoe has a very wide surface or web to protect the sole of the poor mutilated foot from the injury likely to be inflicted by stones on the road,—injury that before shoeing could have been resisted far better by nature's protection.

"The shoe, as we have seen, was too small; or rather the farrier imagined the plantar surface which supported the weight and strain so admirably in a natural condition, to be too large; so when the metal plate has been securely attached, a large portion of the hoof hangs over it—the best and strongest portion; and this has to be removed with the rasp or toe-knife. The nails have been driven to a certain height in the wall, and as their extremities must be riveted or clinched, these clinches must not be disturbed. The over-hanging crust between them and the shoe, however, is rasped away, and the face of the foot presents a rounded or knobbed appearance, very unlike its natural outline. In all probability the whole external surface up to the coronet is tastefully rasped and polished, the varnish-like covering nature had spread over it is carefully removed, and the fibres beneath are more or less damaged, exposed to desiccation, and shrink; while below the clinches they

have been entirely destroyed, and nothing is left to support the nails holding on the shoe but the thin, soft fibres, as fragile almost as the pith of a rush, and which were never intended by nature to be exposed. Consequently they lose their moisture, wither, crack, and break off, and frequently the shoe is lost, and with it a large portion of the hoof.

"The same process goes on with the sole and frog. The young horn, prematurely exposed, cannot resist the effects of evaporation, and shrinks in the same way. At each shoeing the same routine is followed by the farrier, and the horn is often so hard that artificial means must be adopted to soften it in order to get off a sufficient quantity to allow the sole to spring under the thumb.

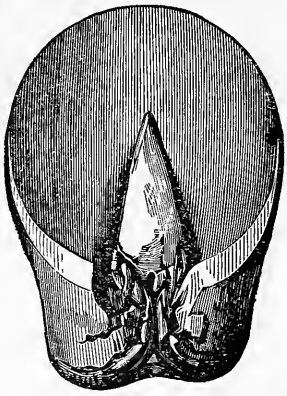


Fig. 563.—Bad effect of excessive paring.

"In this we cannot altogether blame the farrier; he is only carrying out the ideas of men who have published books on shoeing. Can we wonder that it soon becomes necessary to adopt every means to supply, artificially, that which has been removed indiscreetly? Heavy iron shoes with plenty of cover to defend the morbidly sensitive horn of the soles which may have been thinned till the blood was oozing through, before these cumbrous shields were applied. Words cannot describe the agony a horse must experience when he chances to step on a sharp or even blunt stone. And yet the writers who have counseled this mutilation of the foot, have laid this tenderness—the limping gait, and falls with broken knees—to the nails of the shoe preventing expansion. Plates of leather covering the delicate frog and sole, and layers of tar and tow are brought into requisition to compensate—though such is not confessed—for the loss of the horn, but with very small results. In a brief time the whole foot becomes dwarfed; the frog deprived of its natural functions, like the muscles of a paralyzed arm, becomes atrophied, diseased, and almost disappears, the sole becomes still more concave and hard, and the foot toward the heels narrower, as in Fig. 563. At the same time the unfortunate creature begins to move as if it were in pain; the flexor tendon on its course over the navicular bone has lost its support, and has, from the first shoeing, been acting at a very serious disadvantage. The mutilation of the hoof by removing the best portion of the horn at the very time it was most required, has inflicted a serious injury upon it, and the bone over which it has to play during its arduous task of flexing the foot and limb; while the heavy iron shoe and the increase of concussion it engenders on artificial roads, all tend to hasten the ruin of the animal; and, sooner or late, depending on the circumstances, we have either acute or chronic navicular disease, acute or chronic laminitis, or a

host of other maladies of a more or less serious character. I am of course always speaking of the anterior extremities.

"This evil of paring or rasping must be looked upon as the greatest and most destructive of all that pertain to shoeing, or even to our management of the horse. Nine-tenths of the workmen who resort to this practice cannot explain its object, and those who have written in defense of it say it is to allow the descent of the sole and facilitate the lateral expansion of the hoof.

"Fancy our gardeners cutting and rasping the bark off our fruit trees, to assist them in their natural functions, and improve their appearance; and yet the bark is of no more vital importance to the tree than the horn of the sole wall and frog are to the horse's foot.

"*The sole, frog, and bars must on no account, nor under any conditions, unless those of a pathological nature, be interfered with in any way by knife or rasp.* As certainly as they are interfered with, and their substance reduced, so surely will the hoof be injured. Nature has made every provision for the defense. They will support the contact of hard, soft, rugged, or even sharp bodies, if allowed to escape the drawing knife; while hot, cold, wet, or even dry weather has little or no influence on the interior of the foot, or on the tender horn, if man does not step in to beautify the feet by robbing them of their protection, perhaps merely to please the fancy of an ignorant groom or coachman.

"If we closely examine the upper surface of the sole of a hoof that has been separated from its contents by maceration, we will find it perforated everywhere, by myriads of minute apertures, which look as if they had been formed by the point of a fine needle. If we look also at the vascular parts of the foot that have been in contact with this horny surface, it will be observed that they have been closely studded with exceedingly fine, yet somewhat long filaments, as thickly set as a pile of the richest Genoa velvet. These are the villi, or papillæ, which enter the horny cavity and fitting into them like so many fingers into a glove, constitute the secretory apparatus of the frog as well as the sole. Each of the filaments forms a horn tube or fibre, and passes to a certain depth in a protecting canal whose corneous wall it builds. When injected with some colored preparation, one of them makes a beautiful microscopical object, appearing as a long, tapering net-work of blood-vessels, surrounding one or two parent trunks, and communicating with each other in a most wonderful manner. These filaments are also organs of tact, each containing a sensitive nerve, destined to endow the foot with the attributes of a tactile organ.

"This distribution will enable us to realize, to some extent, the amount of injury done by paring. The horn thrown out for their defense and support being removed by the farrier's knife, and perhaps the ends of these villi cut through, the meager pelicle remaining rapidly shrivels up, the containing cavity of each vascular tuft as quickly contracts on the vessels and nerves, which, in their turn, diminish in volume, disappear, or become morbidly sensitive, through this squeezing influence. The feet of a horse so treated are always

hot, the soles are dry and stony, and become unnaturally concave. The animal goes tender after each shoeing, and it is not until the horn has been regenerated to a certain extent, that he steps with anything like ease. Until the new material has been formed, each papillæ experiences the same amount of inconvenience and suffering that a human foot does in a new, tight boot.

"This tenderness is usually ascribed to the nails and other causes; and the horse, in the stable, rests on one foot, then on another, as if he suffered uneasiness or pain.* * *

"All the preparation any kind of foot usually requires for the shoe may be summed up in a few words; leveling the crust in conformity with the limb and foot, and removing as much of its margin as will restore it to its natural length, rounding its outer edge at the same time, and leaving the sole, bars, frog, and heels in all their natural integrity."

Osmer, an old writer of good standing, in 1751, says:—

"I believe there are many horses that might travel their whole lifetime unshod on any road, if they were rasped round and short on the toe; because all feet exposed to hard objects become thereby more obdurate, if the sole be never pared; and some, by their particular form, depth, and strength, are able to resist them quite, and to support the weight without breaking; and here a very little reflection will teach us whence the custom arose of shoeing horses in one part of the world and not in another. In Asia there is no such custom of shoeing the horse at all, because the feet require a very obdurate and firm texture from the dryness of the climate and the soil, and do really want no defense. But every rider has a rasp to shorten his horse's feet, which would otherwise grow long and rude, and the crust would most certainly split."

He continues by saying,—

"From the good that was found to arise from putting shoes on horses which have naturally weak feet from being brought up on wet land, the custom of putting shoes on all kinds of feet became general in some countries. Our ancestors, the original shoers, proposed nothing more, I dare say, in their first efforts, than to preserve the crust from breaking way, and thought themselves happy that they had skill enough so to do. The moderns also are wisely content with this in the racing way.

"In process of time the fertility of invention and the vanity of mankind have produced a variety of methods; almost all of which are productive of lameness; and I am thoroughly convinced from observation and experience, that 19 lame horses out of every 20 are lame of the artist, which is owing to the form of the shoe. His ignorance of the design of nature, and maltreatment of the foot, every part of which is made for some purpose or other, though he does not know it.

"I suppose it will be universally assented to that whatever

method of shoeing approaches nearest to the law of nature, such is likely to be the most perfect method.* * *

"The superfices of the foot around the outside, now made plane and smooth, the shoe is to be made quite flat, of an equal thickness all around the outside, and open and most narrow backward at the extremities of the heels, for the generality of horses, those whose frogs are diseased, either from natural or incidental causes require the shoe to be wider backwards; and to prevent this flat shoe from pressing on the sole of the horse, the outer part thereof is to be made thickest, and the inside gradually thinner. In such a shoe the frog is permitted to touch the ground, the necessity of which has already been seen. Add to this, the horse stands more firmly upon the ground, having the same points of support as in a natural state."

"Make the shoes as light as you can according to the size of your horse, because heavy shoes spoil the back sinews and weary the horse; and if he happen to overreach, the shoes, being heavy, are all the more readily pulled off.

"Those who think it frugality to shoe with thick and heavy shoes, and seldom, are deceived, for they lose more by it than they gain; for thereby they not only spoil the back sinews, but lose more by it than if they had been light."

It is conceded by all the best modern authorities that the French author above referred to, whose work was published in 1750, was the great father of a correct system of reform in in shoeing. It was supposed in his day as it is in a great measure now, that a horse could not travel without having heavy, unwieldy shoes on, and that the greatest skill was exhibited in the amount of cutting and rasping done on the feet.

He boldly proclaimed that all this was injurious, and tried to prove it by the most convincing arguments. The principles of treatment, though given a hundred and thirty years ago, are just as important now as they were then. He says:—

"In the state of nature, all the inferior parts of the foot concur to sustain the weight of the body; then we observe that the heels and frogs, the parts said to be most exposed, are never damaged by wear, that the wall or crust is alone worn on going on hard ground, and that it is only this part which must be protected, leaving the other parts free and unfettered in their natural movements."

In advising tips or thin-heeled shoes, he says:—

"Thin tips extending back to the middle of the quarters, allowing the heels to bear upon the ground, and the weight to be sustained behind and before, but particularly in the latter, because the weight of the body falls heaviest there.

"The shorter the shoe is, the less the horse slips, and the frog has the same influence in preventing this that an old hat placed under our own shoes would have in protecting us from slipping on the ice.* * *

"It is necessary, nevertheless, that hoofs which have weak walls should be a little longer shod, so that the gradually thinning branches reach to the heels, though not resting upon them. For horses which have convex soles, these long shoes should also be used, and the toes should be more covered to prevent the sole touching the ground. This is the only true method of preserving the foot and restoring it. A horse which has its feet weak and sensitive, ought to be shod as short as possible, and with thin branches, so that the frog comes in contact with the ground; because the heels, having nothing between them, are benefited and relieved." See Fig. 564.

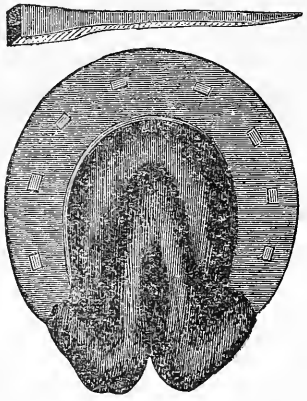


Fig. 564.—Thin shoe devised and used by Lafosse.

"Crescent shoes are all the more needful for a horse which has weak, incurvated quarters, as they not only relieve them, but also restore them to their natural condition. Horses which have contusion at the heels (blains, corns), should also be shod in this way; and for cracks (seins, sand-cracks) at the quarter, it is also advantageous.

"The sole or frog should never be pared; the wall alone should be cut down, if it is too long. When a horse cuts himself with the opposite foot, the inner branch of the shoe ought to be shorter and thinner than the outer.

"Rasping the foot destroys the strength of the hoof, and consequently causes its horn to become dry, and the horny laminæ beneath to grow weak; from this often arises an internal inflammation, which renders the foot painful, and makes the horse go lame.* * *

"When a horse loses a shoe, a circumstance often occurring, and if the hoof is pared, the animal cannot walk a hundred steps without going lame; because in this state the lower surface of the foot being hollowed, the horse's weight falls upon the crust, and this, having no support from the horny sole, is quickly broken and worn away; and if he meets hard substances on the road, he all the more speedily becomes lame. It is not so when the sole is allowed to retain its whole strength. The shoe comes off, but the sole and frog rest on the ground, assist the crust in bearing the whole weight of the body, and the animal, though unshod, is able to pursue his journey safe and sound. . . . It is necessary to be convinced of another fact; that is, it is rare that a horse

goes at his ease and is not promptly fatigued, if the frog does not touch the ground. As it is the only point of support, if you raise it from the ground by paring it, there arises an inordinate extension of the tendon, caused by the pushing of the coronary against the navicular bone, as has been mentioned above, and which, being repeated at every step the animal takes, fatigues it and induces inflammation. From thence often arises distentions of the sheaths of tendons (moletts-vulgo, 'windgalls") engorgements, and swelling of tendons, etc., that are observed after long or rapid journeys. These accidents arise less from the length of the journey, as has been currently believed, than from the false practice of paring the sole. . . . We always find ourselves more active and nimble when we wear easy shoes; but a wide, long, and thick shoe will do for horses what clogs do for us,—render them heavy, clumsy, and unsteady. . . .

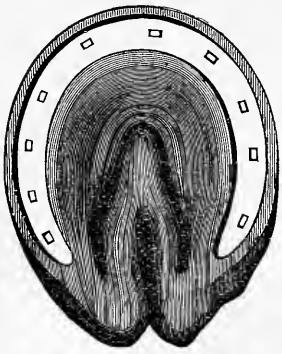


FIG. 565.—Shoe devised by Lafosse for use on dry and slippery roads. A thin slip of iron let into the wall, and fastened with ten small nails.

"That feet become convex by hollowing the shoes to relieve the heel and frog, because the more the shoes are arched from the sole, the more the wall of the hoof is squeezed and rolled inward, particularly toward the inner quarter, which is the weakest, the sole of the foot becomes convex and the horse is nearly always unfit for service. . . .

"The reason why it is dangerous to pare the feet of horses is, that when the sole is pared, and the horse stands in a dry place, the horn becomes desiccated by the air which enters it, and removes its moisture and its suppleness, and often causes the animal to be lame. . . .

"It is the pared foot that is more affected with what is termed contracted or weak inside quarter, and which also lames the horse.

"It also happens that one or both quarters contract, and sometimes even the whole hoof, when, in consequence of its smallness, all the internal parts are confined in their movements; this is due to paring, and lames the horse,

"There also occurs another accident: When the quarter becomes contracted, the hoof splits in its lateral aspects, and the horse is lame. This accident is termed a sand-crack (seime)."—*Lafosse.*

Though not generally known, this system of shoeing has long been in use in India. Freeman, in his work published in 1796, who is yet considered good authority, strongly advocated this system of shoeing. He gives the following statement which explains itself:—

"The instance in which I was disappointed is that of a horse kept entirely for that of a riding-horse, and which is consequently almost daily under my own inspection. This horse has very strong feet, one of which was smaller than the other, with the toe turning out and the frog almost wasted. The bars of this foot, before he was turned out, were scarcely visible, but upon examining them after he had been out about three months, they were found to have increased surprisingly. Notwithstanding this, they were not strong enough to counteract the pressure of the quarters; and the foot itself appeared to be rather decreased, which is contrary to what is usual; for after having been turned out for a certain time, they generally become larger. So particular a case led me to turn my mind to a particular method of cure. This I should have hardly found out, if chance had not at that time put into my hands Lieu-

Fig. 566.—The Goodenough thin-heeled shoe.

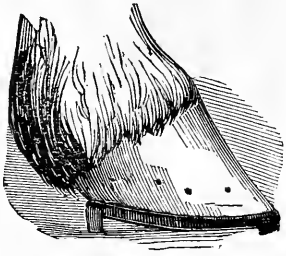


Fig. 567.—The ordinary shoe as usually fitted.

tenant Moor's Narrative of Captain Little's detachment. On page 93 of this book is the following passage :—

"'The bigotry with which all sects of the Hindoos adhere to their own customs is very well known; still when these customs are strikingly injudicious, and totally abstracted from all religious prejudices, perseverence degenerates into obstinacy, and simplicity into ignorance. So it is with the Mahrattas in abiding by their present practice of cutting the hoof and shoeing horses; they cut away the hinder part of the hoof in such a manner that the pastern almost touches the ground, and the frog is suffered to grow so that the hoof is nearly a circle, in which form the shoes are made, the hinder parts almost touching, and so thin that a person of ordinary strength can easily twist them. Instead of making the back part of the shoe thickest, they hammer it quite thin, making the fore part thickest, and the shoe, gradually becoming thinner, ends in an edge.'

"This mode of shoeing in a country where, from the nature of the climate, the horse's feet probably are very strong, did not strike me to be quite so injudicious as the author above mentioned repre-

sents it. I determined, therefore, to try on this particular horse a shoe in some respects similar to those described, that I might see whether it would alter the shape of his foot; since it is said to make 'the frog grow so that the hoof is nearly a circle,' which was the very effect that in this case I wished to produce. I therefore ordered my smith to make a shoe at my own forge in the form I generally use (which will be hereafter described), with the following exceptions: The web of it was to almost cover the sole, room being given to admit a picker; and as it proceeded to the heels, the web on each side was to be continued as far as the cleft which separates the bars from the frog. He was to make the 'fore part the thickest,' and to hammer it so thin at the heels that it would 'end in an edge,' by which a person of ordinary strength could easily twist it."

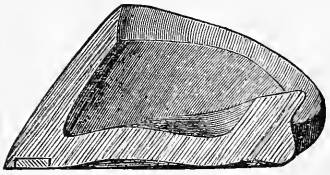


FIG. 568.—Lafosse's method of letting the iron into the hoof.

"I own I apprehended that this shoe, from being so thin at the heels, would bend in different places, and thereby injure the foot. But as it was constantly under my own eye, I knew that if that circumstance should happen, the injury could not be material, in the short time it would be permitted to go unnoticed. But this did not prove to be the case. After the horse had worn this shoe a day or two only, I found the action of the leg was more free than it had ever been before; for the bars with their covering touched the ground; the extremities of the web on each side, by being so very thin, having bent a little over them, but they were prevented from injuring them by being extended to the cleft which separates the bars from the frog. This pressure of the web on the bars was an assistance to them in the expansion of the quarters; and the shoe was kept so wide at the heels that the exterior parts of it could not hurt him. This shoe therefore acted exactly contrary to other shoes, which, as I before mentioned, are generally an impediment to the expansion of the heels, whereas this became an assistance to it.

"In three weeks I took off this shoe to examine the state of the foot. His frog was found to be increased, and in a better condition than I had before seen it. The same shoe was therefore replaced for three weeks more, at the end of which time his foot had become considerably larger and straighter. In a week or ten days more the horse was to go thirty-six miles on a turnpike road.

"Although this kind of shoe had succeeded so well in a riding-horse, I had some doubts about venturing it on the road. However, I at last determined to risk it, and had another shoe put on exactly the same pattern, in which he performed his journey without any injury, so that I have ever since continued to adopt it, having found it to answer beyond any expectation I had formed of it; for that foot which was before smaller than the other, with the toe turning out, has, by the use of this shoe, become of the same size,

and so straight that there is now scarcely any difference between the two feet."—*Freeman.*

The preplantar system, introduced by M. Charlier, of Paris, which is simply letting a narrow band of steel into the wall to prevent wear, thereby preserving the integrity of the bars, sole, and frog, and giving the foot its natural adjustment, is a modification of a shoe introduced by Lafosse for preserving the feet of saddle horses. See Figs. 565, 568.

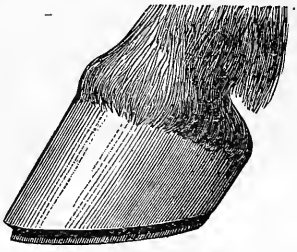


FIG. 569.—M. Charlier's shoe, showing the wall cut away.

As there is no probability of this system (preplantar) being introduced into this country, I will not more than copy a part of the report of a leading Veterinary Surgeon in France, Signol, mainly to show the benefit of keeping the integrity and adjustment of the foot natural in shoeing, or as nearly so as can be :—

"First, in consequence of the comparatively trifling weight of their shoes, the horses acquired a lightness of movement they did not exhibit previously. Second, they gained an extraordinary solidity on the pavement, and did not slip. Third, many horses which always had corns and sand-cracks, and could not be used without bar-shoes, spontaneously recovered from their infirmities after the application of this shoe. Fourth, those frogs which were before shrunken and '*etrangle*,' became considerably developed, a fact which proves that this shoe is perfectly adapted to the physiological movements of the foot."

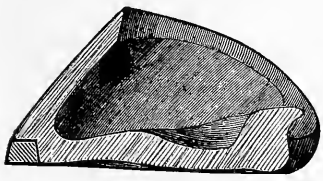
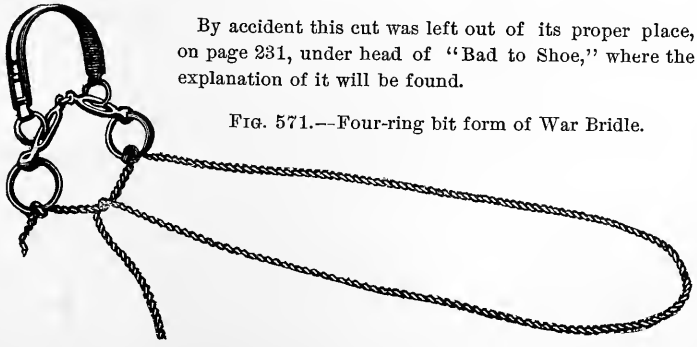


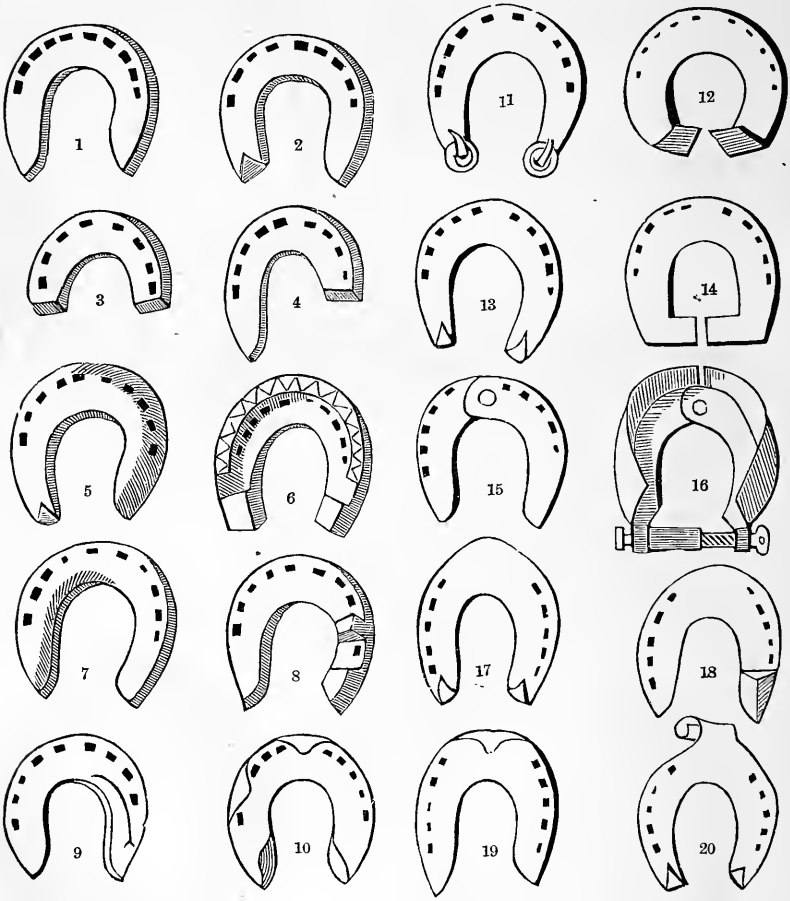
FIG. 570.—Side view of the above, showing the amount cut out.

By accident this cut was left out of its proper place, on page 231, under head of "Bad to Shoe," where the explanation of it will be found.

FIG. 571.—Four-ring bit form of War Bridle.



We give here a few specimens of shoes from Cæsar Fiaschi's work, published in England in the 16th century. The figures of shoes he gives are twenty in number. No. 1. Fore-shoe without calkin ; 2. Shoe with the calkin ; *à 'l Aragonaise* on one side,



Figs. 572–592.

and the other side thickened ; 3. *Lunette* shoe, or "tip"; 4. Three-quarter shoe; 5. Beveled shoe, with the *Aragonaise* calkin on one branch, and the other thick at the heel ; 6. Shoe with *sciettes*, or projecting toothed border, thickened toward each heel to prevent slipping ; 7. Thick-sided shoe, thin toward the inner border, and seated like the English shoe; 8. Shoe with buttons,

or raised catches on the inner branch, and thickened on the heel of the same side; 9. A shoe which has the inside heel and quarter much thicker and narrower than usual; 10. A shoe with crests or point toward the ground surface on the toe and quarter, and *barbettes* at the heels; 11. A shoe with the calkins doubled over, and provided with rings; 12. The foot surface of a shoe with the heels turning up toward the foot; 13. Shoe with two calkins; 14. A *bar* shoe; 15. A jointed shoe to suit any size of foot; 16. A jointed shoe without nails, and secured by the lateral border and the heel-screw; 17. A hind-shoe with calkins; 18. A shoe with one of the branches greatly thickened at the heel;

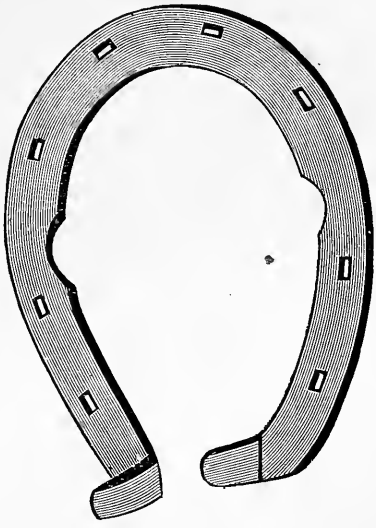


FIG. 593.—Thin shoe for cure of contraction, fitted with clips turned up, as explained on pages 680 and 681.

FIG. 594.—Tartar Chinese shoe.

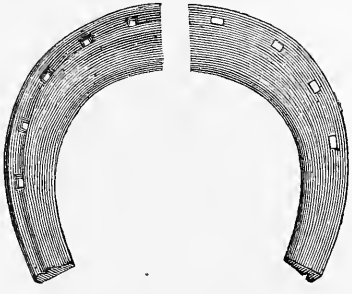


FIG. 595.—Old English concave shoe.

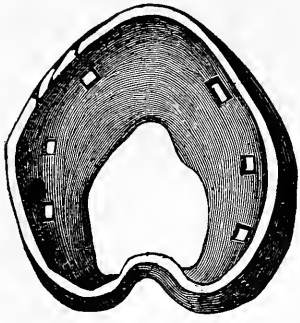


FIG. 596.—French shoe of the 13th century.

19. A hind shoe with a crest or toe-piece; 20. A hind shoe with the toe elongated and curled upward, probably for a foot the back tendons of which were contracted, causing the horse to walk on the point of the toe.

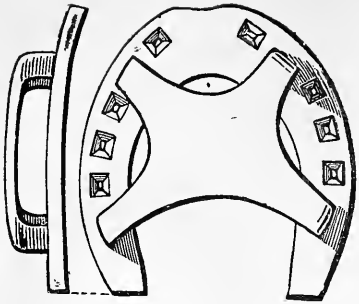


FIG. 597.—A shoe devised to prevent throwing much weight upon the limb when lame.

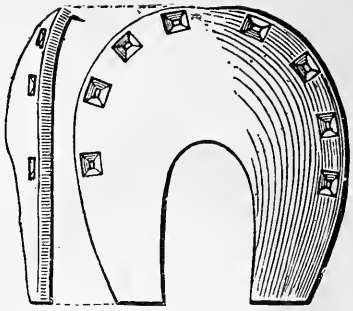


FIG. 598.—Covered shoe, with the branches very wide and thin, and deeply adjusted. Applied to very flat, foundered, or badly-formed feet.

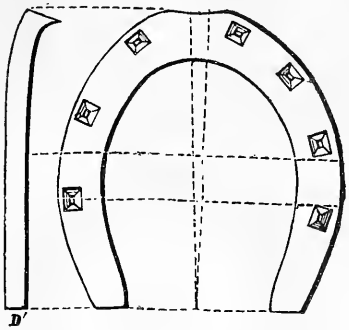


FIG. 599.—Ordinary hind shoe for riding or carriage-horses. Face and side view.

FIG. 600.—Shoe with truncated toe; used on hind feet of horses that overreach.

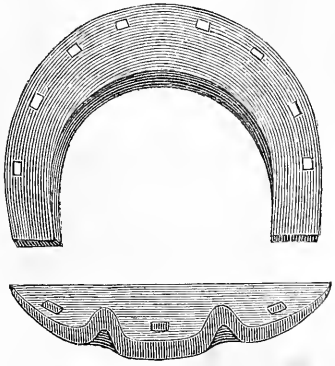


FIG. 601.—Lafosse's Half-moon shoe, and tip of steel.

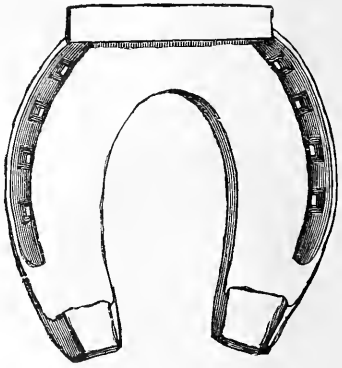


FIG. 602.—Scotch shoe for draught horses.

Below, from Fig. 604–614, are given a variety of old Roman shoes found in England, France, and Switzerland, and supposed to be from nineteen hundred to over two thousand years old. Figs. 604 and 606 are the best preserved.

Fig. 604.

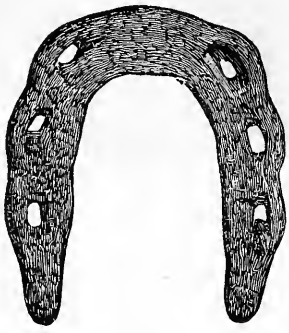


Fig. 605.

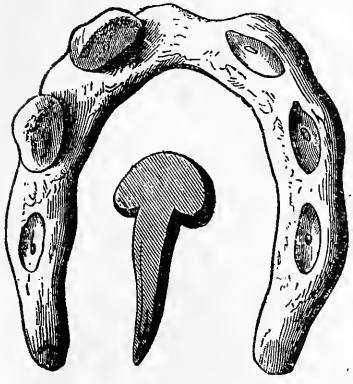


Fig. 606.

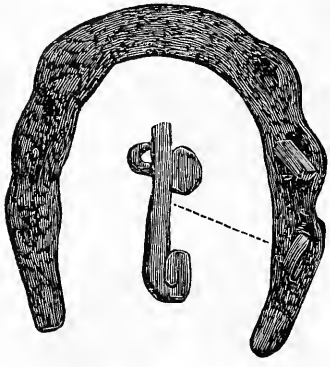


Fig. 607.

Fig. 608.

Fig. 609.

FIG. 610.

FIG. 611. –Supposed to be a pathological shoe.

FIG. 612.

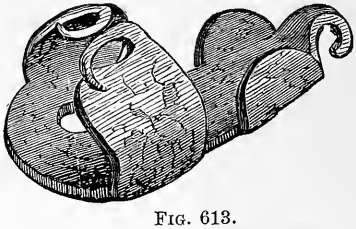


FIG. 613.

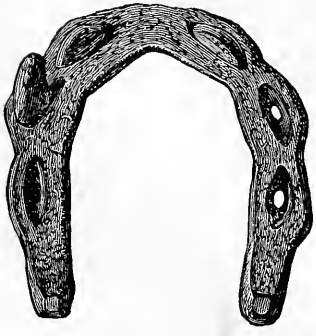
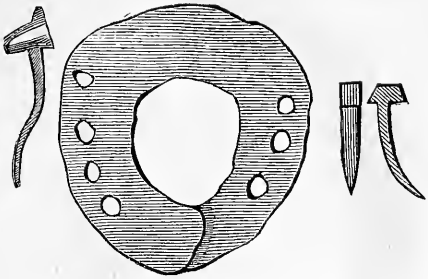


FIG. 614.

FIG. 615.—Shoe found in Germany, supposed to be several hundred years old.

Fig. 616.



Syrian shoes. Fig. 617.

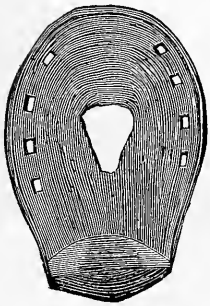
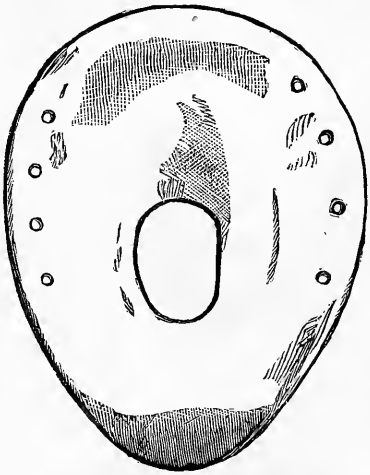


Fig. 618.



Arabian shoes. Fig. 619.

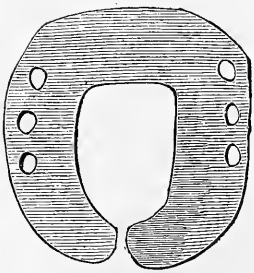
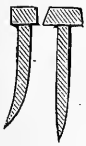


Fig. 620.



African shoes.

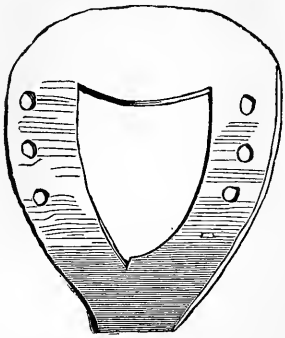


Fig. 621.

CHAPTER XXII.

THE CIRCULATION.

THE phenomenon of the circulation is of so interesting and remarkable a character, and its condition has such an influence upon the health, that I think it advisable, as an introduction to the Medical Department, to make some reference to it. There are so many diseases and difficulties of a serious character which are the result of derangements of circulation, that it certainly seems necessary to give some explanation of it, that the reader may be impressed the better with the necessity for such prudence and care as would prevent its disturbance. The writer thinks it also advisable, instead of giving a labored description, which may be easily obtained from any physiology, and which but few would take the trouble to read, to do this mainly by the aid of illustrations, a variety of which have been included at considerable expense.

GENERAL PLAN OF THE CIRCULATION.

The blood is circulated through the body for the purpose of nutrition and secretion, by means of one forcing pump, and through the lungs, for its proper aeration, by another ; the two being united to form the heart. This organ is therefore a compound machine, though the two pumps are joined together, so as to appear to the casual observer to be one single organ. (For general outlines see Fig. 625.) In common language, the heart of the mammalia is said to have two sides, each of which is a forcing pump ; but the blood before it passes from one side to the other, has to circulate through one or the other set of vessels found in the general organs of the body, and in the lungs, as the case may be. This is shown at Figs. 622 and 623, where the blood, commencing with the capillaries on the general surface at *a* (Fig. 623), passes

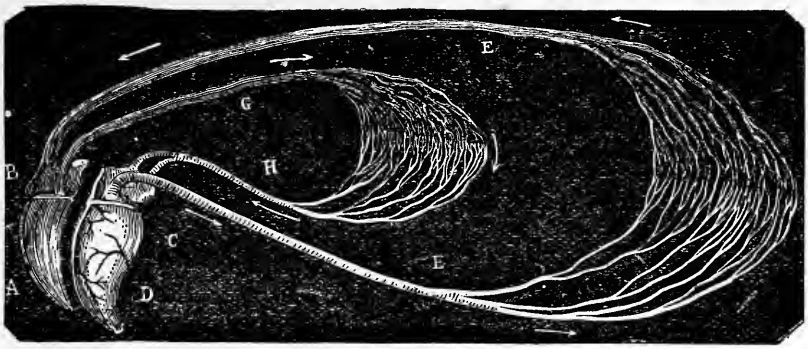


FIG. 622.—Theoretical plan of the circulatory system.

H, D, C, E. The canal for red blood; E, B, A, G. Canal for black blood. The arrows indicate the course of the blood. The two canals are represented in their middle portion, A B, C D, as isolated; but in nature they are enveloped at this point in a common sac that concurs to form the heart.

through the veins which finally end in the vena cava *b*, and enters the right auricle *c*. From this it is pumped into the right ventricle *d*, which, contracting in its turn, forces it on into the pulmonary artery *e*, spreading out upon the lining membrane of the lungs, to form the capillaries of that organ at *f*, from which it is returned to the left auricle *g* through the pulmonary veins. From the left auricle it is driven on through the left ventricle; and this, by its powerful contraction, forces the blood through the aorta *i*, and the arteries of the whole body to the capillaries *a*, from which the description commenced.

While the venus blood is on its way to the heart, when near it, it is met by the thoracic duct (see *k*, *y*, Fig. 626, and *k*, Fig. 627), which conveys into this returning blood the nutritive property of the food extracted from it by the digestive organs. With this new

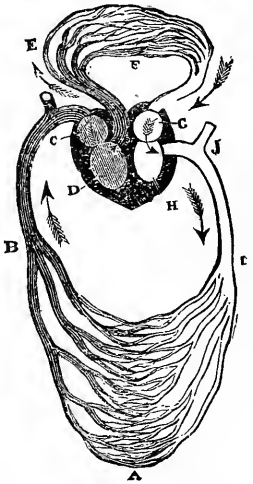


FIG. 623.—Plan of the circulation.

A. Capillaries on the general surface; B. Vena cava; C. Right auricle; D. Right ventricle; E. Pulmonary artery; F. Capillaries of the lungs, uniting to form the pulmonary veins, which enter G. The left auricle; H. The left ventricle; I. The aorta posteria, dividing into smaller arteries, and united with the capillaries at A; J. Trunk of the aorta anterior.

supply of nutritious matter, the blood goes to the heart and lungs to be oxygenized by contact with the air, and thus be continued through the heart and arteries as before explained. The system takes up its material for its wear and tear through the capillaries or hair-like tubes, which are interposed between the two great

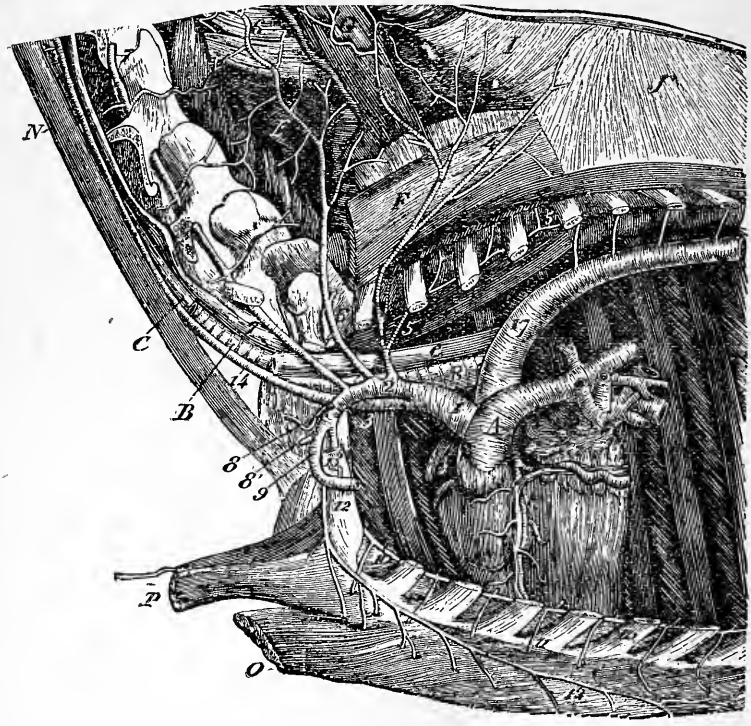


Fig. 624.—Distribution of the anterior aorta.

1. Anterior aorta; 2. Left axillary artery; 3. Right axillary artery; 4. Dorsal artery; 5. Subcostal artery; 12. External thoracic artery; 14. Carotid artery; 17. Posterior aorta; A. Pulmonary aorta; B. Trachea; E. Superior branch of the ilio-spinal muscle; F. Inferior branch of the same; G. Great complexus muscle; I, I. Originating aponeurosis of the splenius and the small anterior serratus muscles; N. Sterno-maxillaris muscle; O, P. Great pectoral and sterno-prescapularis muscles turned downward.

divisions of the vascular system, arteries and veins. These little tubes are so small that they are from $\frac{1}{1000}$ to $\frac{1}{4000}$ of an inch in diameter. The smaller are found in the retina of the eye and brain. The larger in the liver and lungs. The worn-out tissue

The left anterior limb has been removed to show the vessels on the inner aspect of the right limb.

With the exception of the two aortæ, the vena cava, and the vena portæ, all the vessels are double and symmetrical; *i. e.*, found on each side of the body.

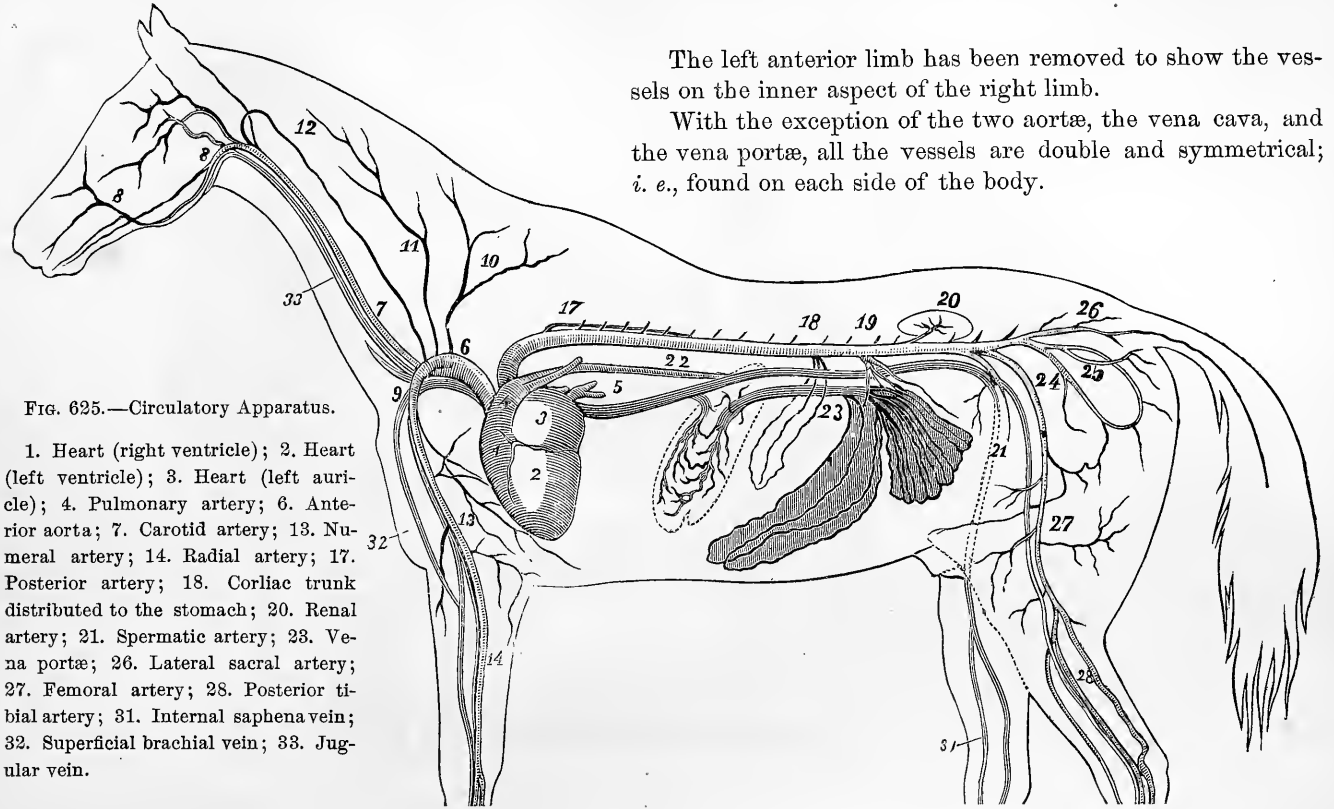


FIG. 625.—Circulatory Apparatus.

1. Heart (right ventricle); 2. Heart (left ventricle); 3. Heart (left auricle); 4. Pulmonary artery; 6. Anterior aorta; 7. Carotid artery; 13. Numeral artery; 14. Radial artery; 17. Posterior artery; 18. Corliac trunk distributed to the stomach; 20. Renal artery; 21. Spermatic artery; 23. Vena portæ; 26. Lateral sacral artery; 27. Femoral artery; 28. Posterior tibial artery; 31. Internal saphena vein; 32. Superficial brachial vein; 33. Jugular vein.

of the body is also taken up by the blood and carried off through the bowels, lungs, kidneys, and skin, which are the natural sewers or depurative channels of the body. The quantity of blood that a horse contains is about $\frac{1}{10}$ of his weight. A horse weighing 1,000 lbs. would therefore have about 100 lbs. of blood, or

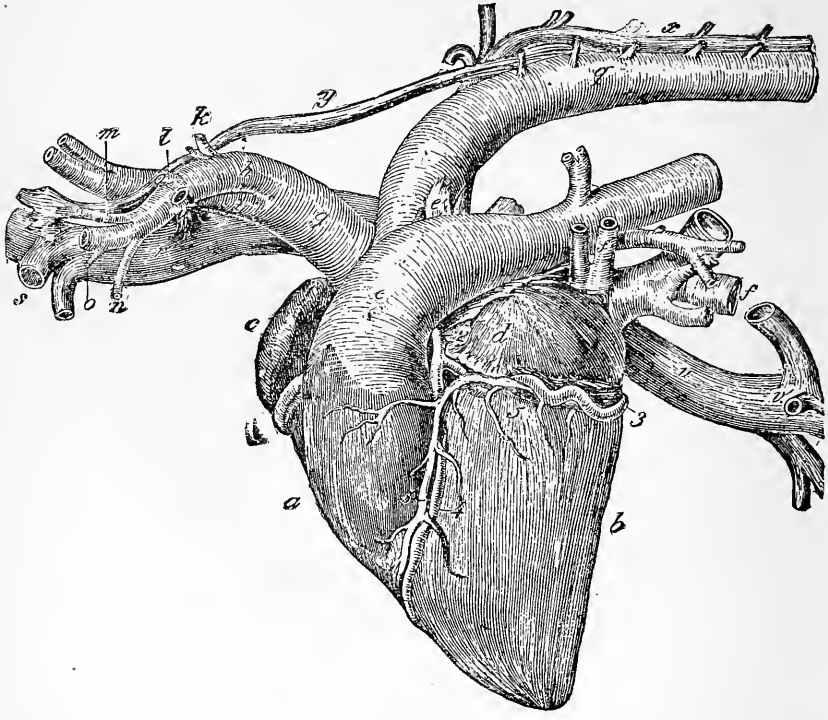


FIG. 626.—The heart and principal vessels; left face.

a. Right ventricle; *b*. Left ventricle; *c*. Right auricle; *d*. Left auricle; *e*. Pulmonary artery; *f*. Pulmonary veins; *g*. Anterior aorta; *h*. Left axillary artery; *i*. Right axillary artery, or brachio-cephalic trunk; *p*. Carotid arteries; *q*. Posterior aorta; *x*. Vena azygos; *y*. Thoracic ducts; *z*. Embouchure of that vessel, placed near the origin of the anterior vena cava.

nearly 50 quarts. Fat horses have proportionately less blood than those that are lean; and it is claimed that wild animals generally have more blood in proportion than the domestic ones. Forty pounds of blood have been taken from medium sized horses without serious injury; and it requires the extraction of about $\frac{1}{15}$ of the total weight before life is destroyed. It is a remarkable fact

that this large amount of blood in the body makes its entire round of circulation in the short period of from two to three minutes. This has been proved by the following experiment, which has been made and repeated many times at the Columbia Veterinary College, New York: The jugular vein was opened on one side of the neck, into which saline matter, or poison, was injected, and on opposite side tapped carotid artery. In fifteen seconds the first traces of the substance injected could be detected in the blood; in twenty seconds it was found very plainly. But while it is known that the main body of blood makes the shorter pulmonary circuit, that part going to the extremities most distant from the heart requires much longer time; but it is assumed that all the blood in the body makes its entire circuit in the short period of from two to three minutes.

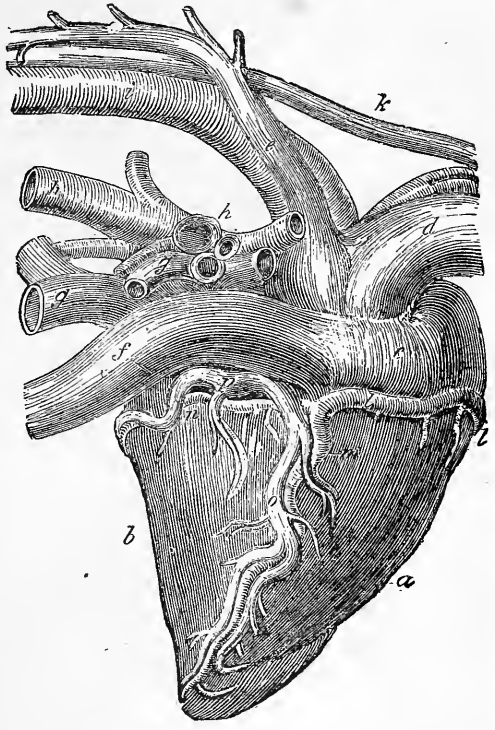


FIG. 627.—The heart and principal vessels: right face.

a. Right ventricle; *b*. Left ventricle; *c*. Right auricle; *d*. Anterior vena cava; *e*. Vena azygos; *f*. Posterior vena cava; *g*, *g*. Pulmonary veins; *h*, *h*. Divisions of the pulmonary artery; *i*. Posterior aorta; *j*. Anterior aorta; *k*. Thoracic duct; *l*. Right cardiac artery; *m*. Its vertical or ventricular branch; *o*. Ventricular branch of the cardiac vein; *p*. Auriculo-ventricular branch of the same.

I refer to this fact, which is not familiar to the average reader, to show the great importance of not subjecting the horse to such

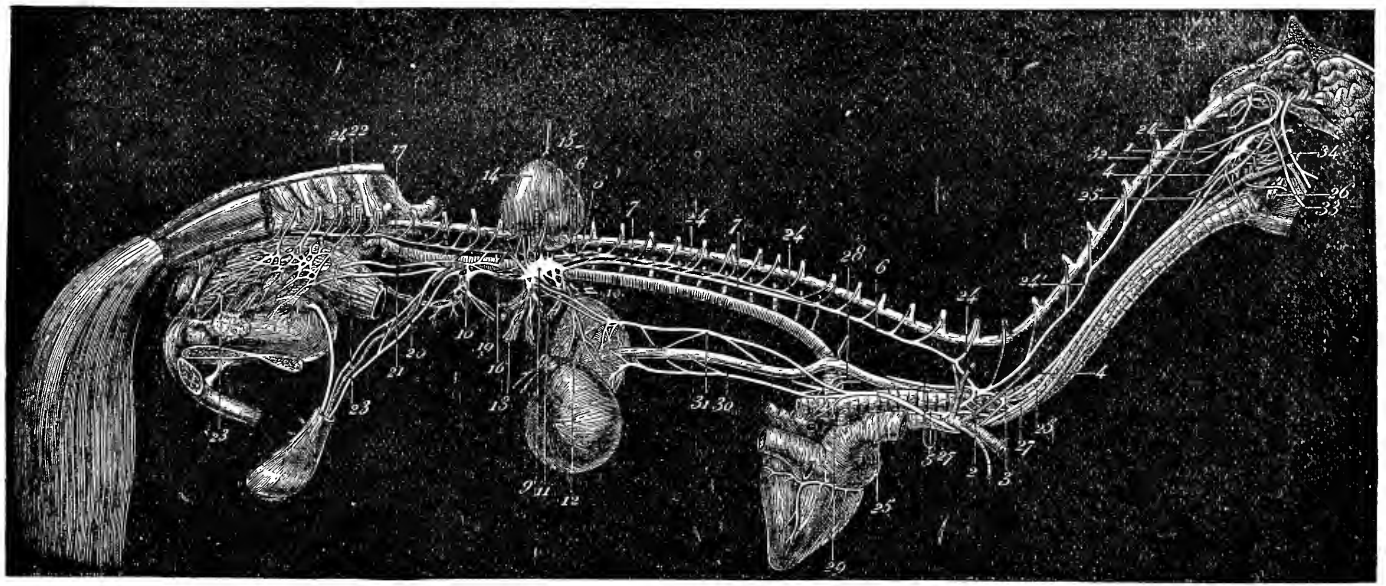


FIG. 628.—The Sympathetic System; partly theoretical.

The spinal cord has been deprived of its bony case throughout the whole extent of its cervical, dorsal, and lumbar portions.

1, 2. Cervical portion of the sympathetic chain ; 6. Dorsal portion of the sympathetic chain ; 7. Great splanchnic nerve ; 9. Semilunar ganglion ; 14. Kidney, elevated, receiving the renal plexus ; 17. Lumbar portion of the sympathetic chain ; 20. Spermatic plexus ; 22. Sacral portion of the sympathetic chain ; 23. Pelvic plexus ; 24. The cord which receives six of the cervical ramuscules ; 30. Superior œsophagean branch ; 31. Inferior œsophagean branch.

influences as will derange the circulatory system. The remarkable energy of the circulation through the blood-vessels is very finely illustrated by spreading and tying apart the toes of a frog's foot, and examining the web through a good microscope. The field of observation will appear like an immense plain cut up with large rivers intersected by numerous small streams, all running with the rapidity of a torrent, the larger currents running much the faster. The blood corpuscles are also clearly distinguishable. Something of an idea of this can be seen by referring to Figs. 631 and 632, which represent such a view of the circulation through the web.

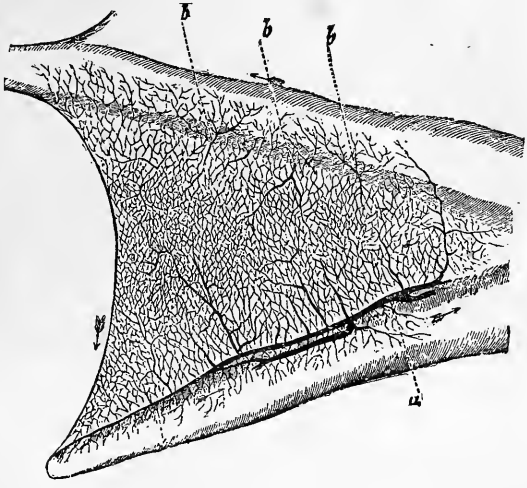


FIG. 629.—Web of frog's foot stretching between two toes, showing the blood-vessels and their anastomoses.

a, *a*, Veins; *b*, *b*, *b*, arteries, the capillaries being between.

FIG. 630.—Epithelial cells of blood-vessels.

a, *b*. From a vein; *c*. From an artery; Magnified 350 diameters.

When the circulation is in its natural state, that is, distributed properly to all parts of the body, it implies a state of perfect health, but if, from any cause, it is withheld or forced from any part of the body, there is not enough blood in that part, while there will be an excess in other parts. Thus, if the horse is exposed to a cold wind, or is chilled by a current of air striking the body, the blood will be forced from its surface to the internal organs, accumulating where there is most freedom for it, or where it is weakest; usually in the lungs and surrounding parts, kidneys, bowels, and sometimes in the feet, the first indication of which would be a shivering fit, followed by fever.

Now it is evident that the object should be, when there is such disturbance, to equalize the circulation again, or force it back to its natural channels as quickly as possible, and that treatment by which this can be done most easily and quickly will be the best. The circulation is really controlled by the nervous system. If the nervous system is from any cause weakened, so that it is unable to act with the usual vigor, there is less ability to resist the influence of disturbing changes, and the horse

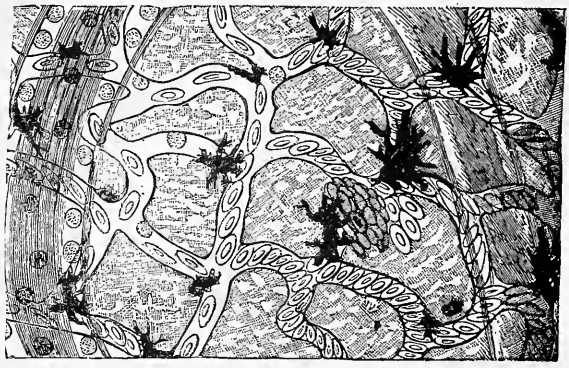


FIG. 631.—Portion of the web of a frog's foot, largely magnified, after a drop of strong alcohol had been placed upon it. The black spots are caused by the congestion induced by the alcohol.

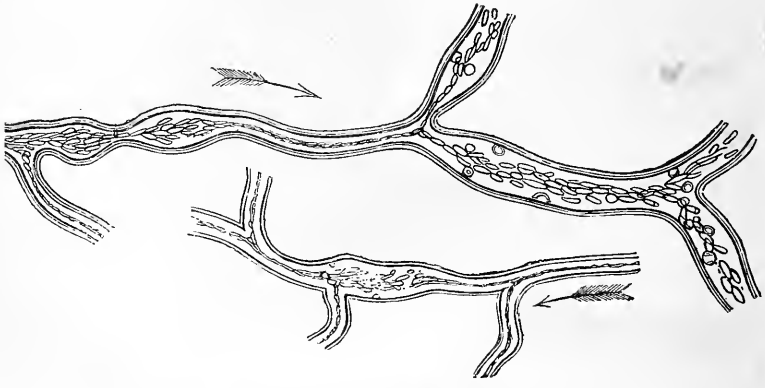


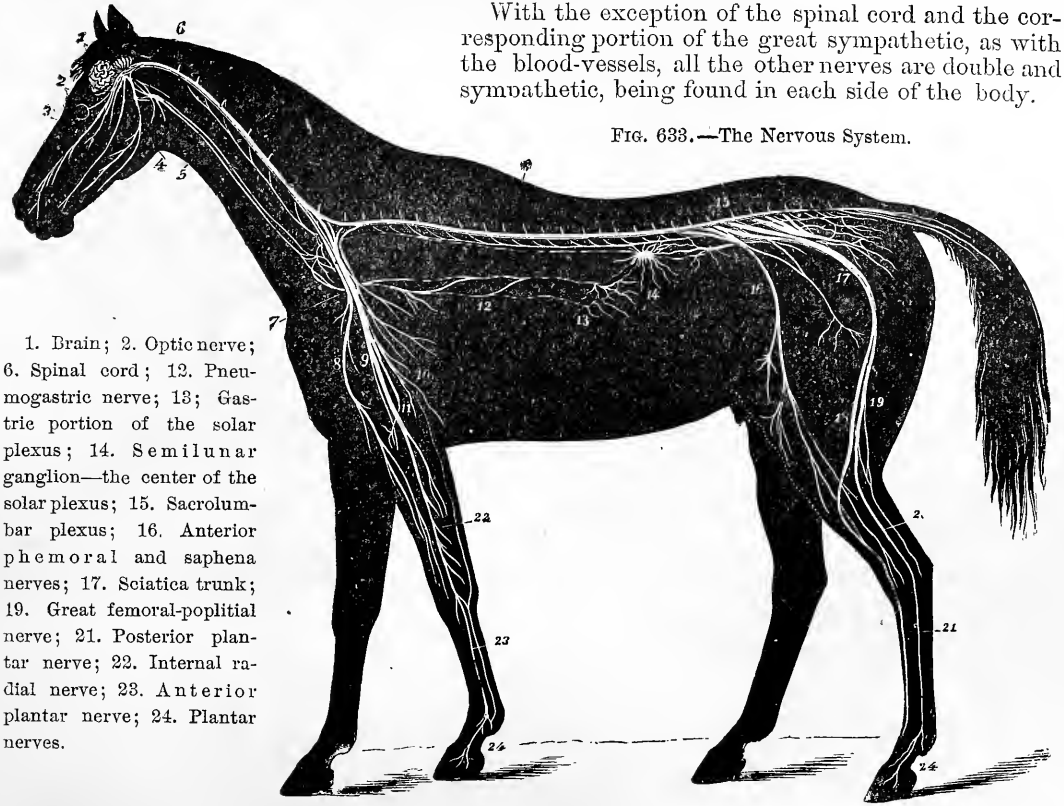
FIG. 632.—Irregular contraction of small vessels in the web of a frog's foot after the application of stimuli.

is, as it is termed, more liable to take cold, which means a disturbance of the circulation.

Hence a horse, when warm and exhausted after a drive, if given a little too much cold water would be liable to have colic,

With the exception of the spinal cord and the corresponding portion of the great sympathetic, as with the blood-vessels, all the other nerves are double and sympathetic, being found in each side of the body.

FIG. 633.—The Nervous System.



1. Brain; 2. Optic nerve; 6. Spinal cord; 12. Pneumogastric nerve; 13; Gastric portion of the solar plexus; 14. Semilunar ganglion—the center of the solar plexus; 15. Sacrolumbar plexus; 16. Anterior phemoral and saphena nerves; 17. Sciatica trunk; 19. Great femoral-poplitial nerve; 21. Posterior plantar nerve; 22. Internal radial nerve; 23. Anterior plantar nerve; 24. Plantar nerves.

founder, etc.; or if allowed to stand in a cold current of air, to have an attack of pneumonia, or some other indication of vascular disturbance before referred to, which would be scarcely felt if cool, and the nervous system in a vigorous condition.

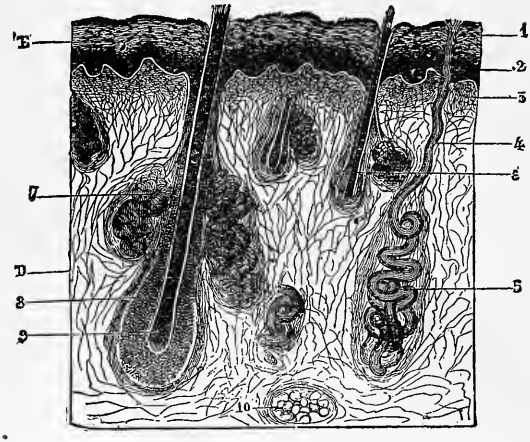


FIG. 634.—1. Superficial layer of skin, or cuticle; 2. Rete mucosum; 3. Corium; 4. Duct of sweat gland; 5. Sweat gland; 7. Sebaceous gland; 8. Walls of hair sac; 9. Root of hair; 10. Fat cells; D. Cellular tissue.

It is evident also that the quality of blood being dependent upon the food taken, and the condition of the air breathed, it is necessary that the food should be clean and of good quality. No moldy grain, hay, or other food unfitted for proper nutrition, should be given, and the stable should be well ventilated with pure air at all times, and all poisonous gases, particularly the ammonia which is formed from the urine, should be allowed free egress from the stable, as the animal cannot be expected to keep in good health while compelled to inhale such malaria.

It is needless to explain the bad effects upon the depurative organs of the derangement of circulation by which these channels are to a greater or less degree "clogged," or unable to do their proper work.

Now, it is within the province of every owner to prevent these troubles by the exercise of care in feeding, exercise, etc., which is much better and easier than to try to cure them when sick. It is far easier to prevent a house from getting burned up by not letting the fire get started, than to depend upon the power of putting it out, for with the best of energy it may cause a destruction of the building. So in the cure of diseases, it is a great deal better and safer to take such measures as will prevent them, for derangements once started will often, in spite of the best of treatment,

greatly injure, if not destroy the animal. It is certainly the owner's duty to guard his horse against unnecessary exposure, or merciless driving until in a profuse perspiration, and then leaving the animal in some cold, bleak place without even a blanket, or but a very poor apology for one, and that thrown on carelessly, while the owner is perhaps enjoying himself with his friends in some drinking saloon, toasting his shins, and the poor horse stands shivering at the door. The effect of such bad treatment will not then have time to develop itself, but will be seen in a few hours, or at farthest on the following day, by a cold or cough, running at the nose, an attack of pneumonia, laminitis, or other cause of trouble.

The three principal points in preserving the health of a horse are feeding, air, and exercise. In the first place, irregularity of feeding, even of the best of food, will produce disease; but when with this is combined the giving of tainted or musty hay or grain, the difficulty is greatly aggravated.

Ventilation.—The stable should be neither too hot nor too cold. The horse will show the effect in a few days by coughing or having slight irritation of the mucous membrane of the throat.

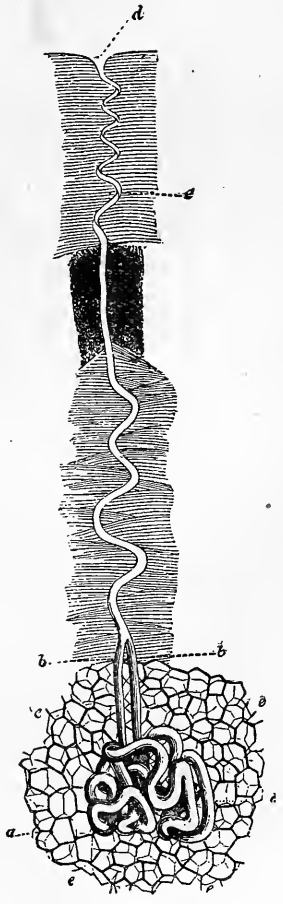


FIG. 635.—Sweat gland, magnified 40 diameters.

b, *b*. Canal; *c*. Gland; *d*. Opening on surface; *e*. Perforated epidermis.

A horse can take cold as easily by going out of the cold air into a hot stable, as he can by going from a hot stable into cold air, and *vice versa*. It is the sudden change of temperature which produces the change on the mucous coat of the larynx and of the throat.

The clothing of the horse in the stable should be neither too heavy nor too light. If kept too warm, he will be more likely to take cold when he goes out to exercise on a cold or chilly day.

To keep a horse doing well, constant attention is necessary to little things—watchfulness in driving ; if the road is heavy, and the horse shows fatigue or is warming up excessively, hold him up and let out on smooth, descending pieces of road—a very little driving without regard to this prudence will often get a horse "off his feed," if not cause sickness; properly clothing and protecting a horse when warm after a drive; care not to give so much cold water as to chill; if there is chill or inclination to fever or the horse is "off his feed" after a drive, giving a little fever medicine, with any other prompt measures to relieve the derangement at its commencement, may prevent a severe attack of congestion or inflammation, if not save the life of the horse. It is in attention to these little things that the real key of the owner's success lies in the care of his horses.

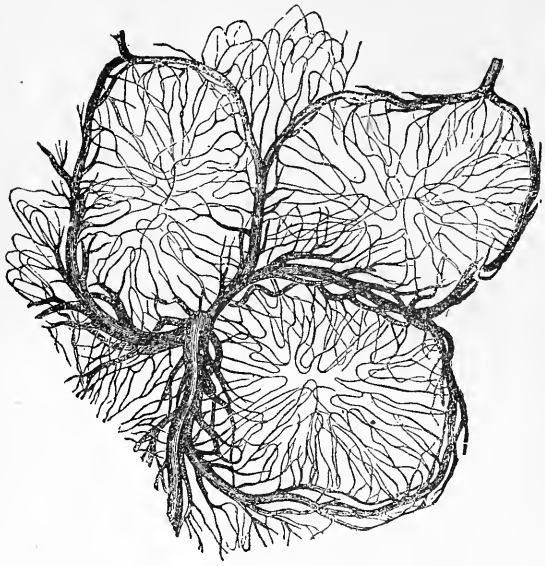


FIG. 636.—Horizontal section through the middle plane of Three Peyerian glands, showing the distribution of the blood-vessels in their interior.

The simplest and best methods of treatment for all the ordinary causes of sickness and lameness will be found on the following pages.

I would add in this connection that there are really but few diseases which are very dangerous or common to horses, and if the owner can be so aided as to successfully manage these difficulties, such knowledge must be invaluable to him. These difficulties comprise colic, inflammation of the lungs, founder, navicular-joint lameness, and shoeing. A horse may die in a few hours from

a severe attack of colic, if not promptly treated; yet it is a difficulty easily managed, if it is known what to do, and it is done promptly. An attack of pneumonia is a very serious thing; but during its first stages is easily managed if taken in hand at once. A horse that is foundered, if not treated promptly, is practically ruined, as a change of structure quickly results; yet every case of acute founder or laminitis is curable, and not only this, but the treatment is so simple that it is not at all difficult to comprehend or apply. Navicular-joint lameness is sure to ruin a horse if not taken immediately in hand; yet it is one of the simplest of difficulties to manage in its first or acute stages, and hence the knowledge of its treatment is of the greatest importance to owners. Shoeing: A horse badly or improperly shod, no matter how good the feet, if the hoofs are thin, is liable to be soon practically ruined.

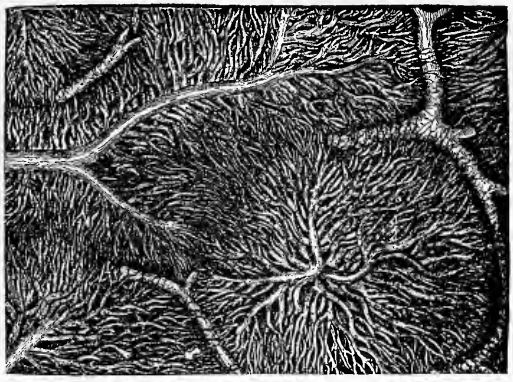


FIG. 637.—Section of the liver of a rabbit, with the hepatic or introlobular veins injected.

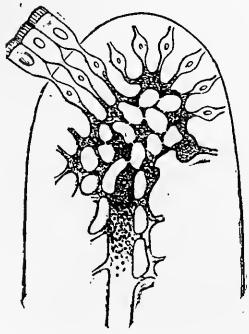


FIG. 638.—Showing the origin of the lacteal ducts in villus.

The treatment for these difficulties will be found to be particularly careful and thorough. There are, of course, many other difficulties which it is important to know how to manage, for which the best practical treatment is given. In fact, the medical department of this work will be found entitled to the fullest confidence, and must be accepted as invaluable to horse owners. The writer would, however, recommend that in all critical cases the safest course is to employ a competent veterinary surgeon, if available.

CHAPTER XXIII.

DISEASES AND THEIR TREATMENT.

Inflammation.

Inflammation is an increased action of the blood-vessels. The consequence is an increased amount of blood to the part.

1. The Heat. This is an invariable symptom, being always present to a greater or less degree. It is produced by the more rapid oxidation going on, consequent on the increased quantity of blood circulating in the parts immediately surrounding.

2. Redness is due to the increased determination of the blood to the part, the distention of the hitherto invisible capillaries with red blood, and sometimes, when extensive, to the extravasation of blood from the bursting of the thin walls of the vessels.

3. Pain. The pain in an inflamed part is almost the first and most characteristic symptom. It is due to the tension of the tissues and implication of the nerves and nerve centers. The degree of pain varies according to the seat of the inflammation and the degree of its intensity. The more sensitive the part, the more painful will it be under inflammation. Thus, it is sharp and cutting in inflammation of serous membranes, dull and gnawing in diseases of bones, and burning in inflammation of the skin. When matter is forming, the pain becomes throbbing and intense.

4. The swelling is due to the vascular engorgement and the exudation of serum in the first place, and afterward the formation of fibrine, and in the the latter stages to the development of matter. The other concomitant symptoms of inflammation will be noticed when we come to treat of local inflammations, or inflammation of particular organs.

Inflammation, though regarded as a disease, is the principal

agent which nature employs in repairing or rebuilding parts which have been injured by accidents or disease. Thus, when a fracture has taken place, the ends of the bone have to be united, inflammation is set up, lymph is thrown out around the fractured ends, small capillary vessels soon shoot into the coagula, from which bony particles are deposited ; and thus by a process of inflammation the continuity of the parts is restored. Inflammation is often made use of to cure diseases and remove callous enlargements. Thus, when a thin opaque film is left on the eye, from a blow or otherwise, a stimulating wash is injected to set up inflammation, to cause blood-vessels to shoot into it, and remove it by absorption. We blister callus enlargements for the same purpose. It will thus be seen that inflammation in many cases becomes a remedy instead of a disease, and is in all cases a necessary and natural process for the repair of an injury.

When a part presents the appearance of inflammation, becoming red, hot, tender, and swollen ; and after a time these appearances subside, without producing any alteration in the structure or functions of a part, it is said to have terminated in *Resolution.* When two cut surfaces are brought together, and exudation takes place, and the surfaces are united, as in the healing of a wound by the first intention, it is called *Adhesion.* When an inflammatory tumor, as that of Strangles, or "Horse Distemper,"—at first, hard, hot, and painful, goes on, softens in the middle, points, and bursts, discharging a yellowish, creamy fluid, called pus,—it is said to terminate in *Suppuration.*

When a part is tardy in healing, and presents an open spreading sore, with red, irregular edges, presenting a mouse-eaten appearance, discharging a thin, irritating pus, mixed up with the debris of the tissues in which it is formed, floating in serum and pus cells, it is said to be in a state of *Ulceration.*

Gangrene, or mortification, that is, the entire death of the whole or part of a tissue, is apt to occur when the inflammation has been sudden and violent. When this has occurred, no recovery can take place, as the blood-vessels and tissues are destroyed; the part generally becomes cold, the color becomes blue or purple, a fetid moisture covers the surface, and noxious gases are evolved. There is always a red line of demarkation between the dead and living tissues; and if the constitutional depression which generally ac-

companies it does not produce death, this red line becomes converted into pus, and the dead part is removed by a process called sloughing.

General Treatment.—We will now merely notice the general principles to be observed in the treatment of inflammation, leaving the treatment of different parts till we take them up in their proper place. Our first thought must be to inquire into the cause of the inflammation; that being found and removed, the effects will soon cease, without which a cure cannot be established. Matter may be forming in the foot, indicated by intense pain, heat, and great lameness. We may foment or poultice or do what we may; the removal of the faulty nail must be the first step in the cure; and that done we will be able to attain our object by comparatively slight means.

The remedial treatment may be divided into *local* and *constitutional.*

Local Treatment.—Our object is to produce resolution if possible. This will be best done by placing the patient in a cool, comfortable box. He must be secured, so as to give the inflamed part complete rest; and then the constant and copious application of cold water, cooling lotions, and freezing mixtures, will retard and often arrest the inflammatory process. Cold, to be of any service, must be kept up for several hours, otherwise the reaction it produces will do more harm than good. Should this not arrest its progress, and the inflammation becomes accompanied by pain and throbbing, heat must be substituted. Hot fomentations and poultices soften and relax the tissues, thus opening the pores, and encouraging the formation of matter, which, when matured, must be opened and allowed to escape.*

It is also advisable in severe cases to give a slight purging ball; and if much fever, give warm drinks and a little fever medicine. When as in sprain of the tendons, instead of going on to suppuration, the swelling becomes callous, the inflammatory action subsides, leaving the effusion unabsorbed. In this stage, and only when heat and tenderness are gone, should blisters be

* This is the course laid down by practitioners in general; but in my experience I have found that where there was much inflammation and pain, it was always advisable to use hot fomentations, and even repeating persistently until its severity could be relieved, at the close leaving on the cloths until cool.

applied. The severity of the counter-irritant must be regulated by the site, condition, and nature of the inflammation.

The remedies which are used to arrest the inflammatory process are called *Antiphlogistics*, the most important of which are blood-letting, purgatives, sedatives, and diuretics. Blood-letting, which has now come almost into disuse, was at one time looked upon as the sheet-anchor in the treatment of inflammation. Without entering into any discussion of the subject, we will simply remark that, though from the abuse which was made of this operation, by being employed unnecessarily, when milder and more simple measures might do, frequently producing injurious results, it has justly been dispensed with; yet we are convinced that to abandon the practice entirely would be to deprive ourselves of a valuable remedy in checking inflammation.

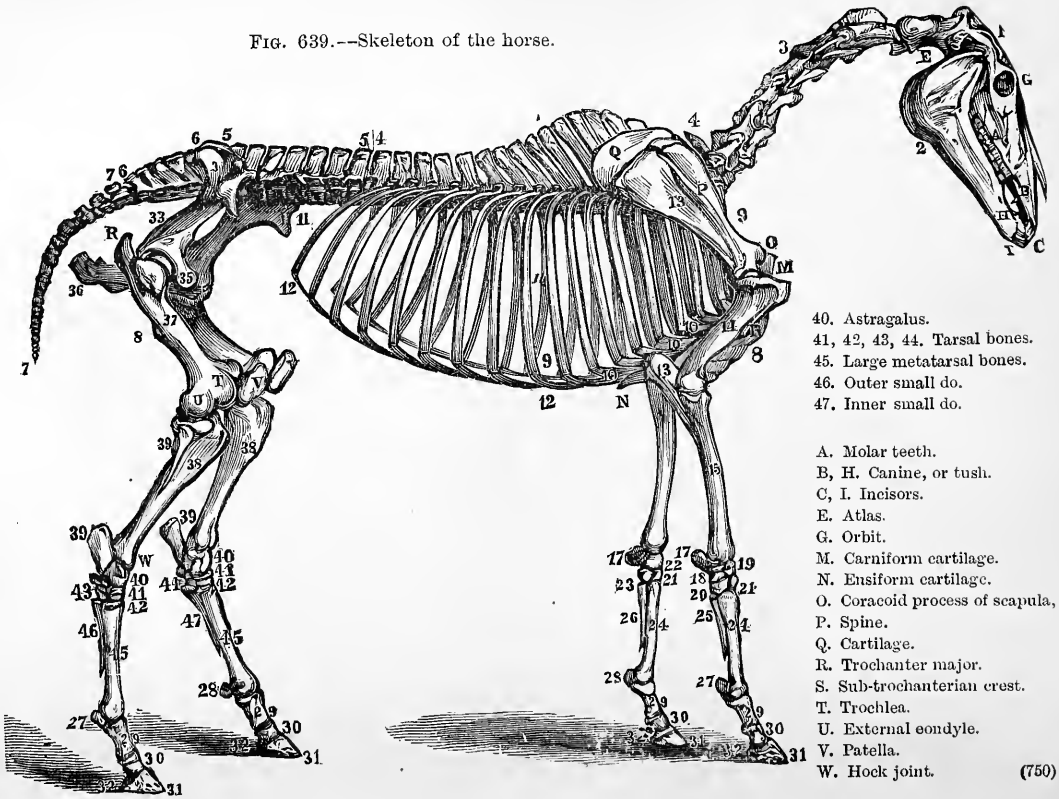
We will meet with cases in which bleeding will be found very useful, not only in checking the inflammatory process, but in promoting the absorption of medicinal agents. At the same time we are convinced that, in the majority of cases in which it is practiced it is useless, and often injurious, prostrating the patient already reduced by disease. When bleeding is resorted to, it must be speedily extracted from a large orifice to make any impression on the system; and the quantity must be regulated by the effect on the pulse, rather than by the quantity withdrawn. It is only in the earlier stages that this operation is warranted; it should never be resorted to in any case showing a tendency to weakness.

Purgatives are very beneficial, and must be given early. They prevent constipation,—a symptom very frequently attendant on inflammation,—besides emptying the system of noxious matters, stimulating the sluggish secretions, and draining off impurities from the blood.

Sedatives are invaluable in extensive inflammations, by subduing the action of the heart. They lessen the fever, and keep down constitutional excitement. They have the advantage over blood-letting as antiphlogistics, inasmuch as they can be kept up much longer, and do not reduce the strength unduly, to harbor which we cannot be too careful. Fleming's tincture of aconite, opium, calomel, digitalis, and belladonna are the principal sedatives used.

Diuretics reduce fever by evacuating the system of fluids, and

FIG. 639.—Skeleton of the horse.



1. Cranium.
2. Lower jaw.
3. Cervical vertebræ.
4, 4. Dorsal vertebræ.
5, 5. Lumbar vertebræ.
6, 6. Sacrum.
7, 7. Coccygeal vertebræ.
8. Sternum.
9, 9. True ribs.
10, 10. Cartilages of true ribs.
11, 11. False ribs.
12, 12. Cartilages of false ribs.
13. Scapula.
14. Humerus.
15. Radius.
16. Elbow.
17. Os pisiform.
18, 19, 20, 21, 22, 23. } Carpal bones.
24. Large metacarpal bone.
25. Outer small metacarpal bone.
26. Inner small metacarpal bone.
27, 28. Sesamoid bones.
29. Os suffraginis.
30. Os coronal.
31. Os pedis.
32. Wing of pedal bone.
33. 34, 35, 36. Os innominatum.
37. Femur.
38. Tibia.
39. Os calcis.
40. Astragalus.
41, 42, 43, 44. Tarsal bones.
45. Large metatarsal bones.
46. Outer small do.
47. Inner small do.

A. Molar teeth.
B, H. Canine, or tush.
C, I. Incisors.
E. Atlas.
G. Orbit.
M. Carniform cartilage.
N. Ensiform cartilage.
O. Coracoid process of scapula,
P. Spine.
Q. Cartilage.
R. Trochanter major.
S. Sub-trochanterian crest.
T. Trochlea.
U. External condyle.
V. Patella.
W. Hock joint.

by stimulating the secretions in the kidneys and skin. Small and repeated doses of nitrate of potash (salt petre), bitartrate of potash, sweet spirits of nitre, dilute acids, etc., by their cooling action, and by favoring absorption, tend greatly to reduce fever and relieve inflamed parts. Nothing tends more to success in the treatment of inflammation than attention to diet and regimen. The comfort of the patient must be attended to; he should have a cool, roomy, loose box; and laxative, easily digested food, such as green food, bran mashes, etc., should be given so as to keep the bowels open.

Diseases of the Bones.

The skeleton of a horse is made up of 242 bones; and as these bones are the hard frame-work of the animal body, serving for the support and attachment of the softer textures and the protection of delicate organs, they are consequently liable to the same accidents and diseases as the other parts of the body. They are composed of animal and earthy matters, in the proportion of one-third of the former to two-thirds of the latter. They are covered externally by a sensitive and vascular membrane called the periosteum, and lined internally by a similar membrane called the endosteum. They enter into the formation of the joints, their ends being held together by the ligaments, and their adjoining surfaces being covered by cartilage or gristle, with a lubricating fluid between, called synovia, or joint oil, to prevent friction and facilitate the motion of the joint.

Diseases of the bones are not very numerous in the lower animals; the most common are *Exostosis*, in which we have an enlargement or bony tumor thrown out on the surface of the bone; when between two bones, and uniting them together, it is called *Anchylosis Caries*, generally defined to be an ulceration or disintegration of the bony texture; *Necrosis*, which is the entire death of the whole or part of a bone; *Osteosarcoma*, which is a disease, more particularly of the ox tribe, in which we have a tumor on the bone, partly bony and partly fleshy, occurring commonly on jaws or ribs; and *Enchondroma*, consisting of a cartilaginous or gristly tumor on a bone; it is more common in man, but is also seen in cattle, and occasionally in the horse.

Anchylosis of Bone.

Anchylosis is simply extensive exostosis, in which we have the ends of two or more bones united by bony matter, as shown in ring-bone, spavin, splint, etc.

Symptoms are enlargements round the joint, which is stiff and inflexible, and in some cases the animal is lame.

Treatment.—If there is lameness, blister or fire, as may be thought necessary, so as to complete the union of parts. The motion of the joint cannot be restored by any treatment.

Caries of Bone.

Caries is generally defined to be ulceration or disintegration of the bony texture, and is supposed to be ulceration of the soft tissues; but this is not, histologically speaking, correct. We find in caries the bone undergoes several very marked changes. It decreases in density (owing to the decrease in the proportion of organic matters entering into its composition), and presents a peculiar worm-eaten appearance, which enables us always to recognize a carious bone in the dried state. See specimens in chapters on Navicular-Joint Lameness, and Laminitis.

Causes.—It may arise from whatever may produce inflammation of the bone, or arrests or suspends its nourishment. It is a frequent sequel of fracture in the ribs, sometimes from neglect or mismanagement of poll-evil, or fistula of the withers; in cattle, sometimes from "foul of the foot." Whatever destroys the periosteum may produce caries.

Symptoms.—The surrounding tissues are swollen; there is an opening into the diseased bone, from which acrid, bad-smelling matter discharges, in which float speculæ of disintegrated bone. On examining the bone, it presents a fungus, which readily bleeds when touched; on pressing the finger into it, sharp processes of bone are felt, which are the bone breaking up. The bone is easily punctured with a probe or knife.

Treatment.—This, in most cases, is a very tedious affair. In the first place the wound must be freely opened, and the parts touched with dilute hydrochloric acid several times a day. Mineral and vegetable tonics must be given. Where practicable, as

on the withers, the diseased portion should be cut off with a fine saw. Occurring in a joint, we must endeavor to produce anchylosis of the joint, the treatment of which has been explained as for spavins, etc.

Necrosis of Bone.

Necrosis is generally defined to be the entire death or mortification of a bone. It differs from caries, in which the bone is discharged in particles; whereas in necrosis not unfrequently the whole bone dies and becomes encased in a new bone of exactly the same shape, which is perforated by numerous holes, through which the old bone exfoliates.

Causes.—In man it not unfrequently arises from constitutional causes,—scrofula, etc.; out in the lower animals it generally arises from local causes, mechanical injuries, extensive destruction of the surrounding soft parts, especially if it involves the artery supplying nourishment to the bone. In young thoroughbred horses, we are familiar with it from sore shins, which arises from the animal being put in training too young. The concussion sets up inflammation of the periosteum, which may be followed by caries, but more commonly necrosis of the cannon bone.

Symptoms.—The external appearances do not differ very materially from caries. We have sinuses penetrating the bone, from which there is a copious discharge of most offensive-smelling matter, in which are occasionally discharged pieces of dead bone which have escaped through the holes in the new bone. This is called the process of exfoliation. It is easily distinguished from caries by the surface of the bone not being worm-eaten, but smooth, and studded with numerous holes. Again, it is not soft, as in caries; it cannot be punctured with the probe, and it is as heavy, if not heavier, than in health.

Treatment.—It must be treated on the same principle as caries. The sinuses must be kept open, frequently washed out, and some stimulant injected, as hydrochloric acid (diluted), and tonics, and good food must from the first be given.

Exostosis, or Bony Enlargement.

Exostosis is, in general, the consequence of periostitis, or inflammation of the vascular membrane covering the bone, though it doubtless also arises from other causes. It sometimes comes on without having attracted the least attention, or produced the least apparent disturbance to the animal, and may appear on any bone in the body, or on any part of a bone, sometimes so small as to escape observation altogether, and sometimes is very large. It may be caused by external injury, or it may be the result of constitutional disturbance, more commonly the former. Its nature, causes, symptoms, and treatment will be better understood by taking the most common example of splint, spavin, and ringbone.

Fig. 640.—Exostosis.

1. Splint; 2, 3. Enlargements caused by injury.

Fig. 641.—An exostosis, or bony enlargement below the knee.

Splint, or Splent.

Splint is a hard, bony tumor occurring on the inside of the shank or cannon-bone of the fore leg, usually well up near the knee, which is well represented by Fig. 642. It is situated partly on the splint-bone (from which it takes its name), and partly on the cannon. Young horses are most subject to splints. The periosteum in them being more vascular than in old animals, it is more liable to inflammation, which is very readily induced in the unsolidified bones of the young horse when exposed to concussion or external violence. It occurs in the inside, because the center of gravity falls through that part; when there is splint or enlargement on the outside, it is usually caused by an injury. Sometimes the opposite foot striking the part will cause so much inflammation as to produce considerable soreness and lameness, followed by thickening and enlargement of the part.

Symptoms.—At the start there may be no enlargement, nor anything to indicate the seat of trouble. The horse appears all right on a walk or on soft ground; but if moving rapidly on a hard road, and especially down hill, considerable lameness will be

shown. Running the fingers along the edge of the bone from the knee down, and pressing with the ends of the fingers, inflammation or enlargement will soon be discovered, both by heat and tenderness, and in time by enlargement.

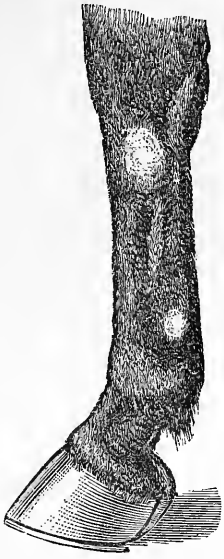


Fig. 642.—Splint, and small wind-gall.

Fig. 643.—A splint after cure.

Treatment.—If the inflammation is up near the joint, it will usually be more serious, and cause more lameness; but as a general thing, splints require but very little treatment, and in time will get well themselves if let alone. During the acute stage, treat simply with cooling applications. Cold water turned for some time from a pump or by other means of letting a steady stream strike the part, which should be continued for at least fifteen minutes, and repeated two or three times a day, would be best. If this is not done, then tie several thicknesses of cloth around the part, and keep wet; but this will not be so good as the first method. The following is a favorite remedy for any local inflammation:—

2 drachms muriate of ammonia.
2 ounces vinegar.
2 ounces water.
4 ounces spirits of wine. Mix.

The simplest and quickest way of relieving the lameness, and that which is now practiced very generally by veterinary surgeons, is to cut through the periosteum over the part. This is done by catching up the skin between the thumb and finger at the lower edge of the splint, and with a knife or other instrument make an incision in it; then pass up under it a probe-pointed bistoury, or

a common nicking-knife, to the top, and cut down to the bone. The part may now be treated as for simple inflammation; afterward, simply by cooling applications. The usual treatment is, after the acute stage has passed off, to clip the hair and blister once or twice. Or, a more effectual way would be by firing, the best way of doing which is by the pyro-puncture process; but this is seldom necessary.

I give several excellent remedies for splints and ordinary enlargements, either of which may be used; also a number under the head of Special Remedies, given near the close of this book, all of which are very good. The following is also used with much success:—

1 ounce oil of origanum.
1 ounce oil of turpentine.
½ ounce of alcohol.

To be applied night and morning, for a few days at a time.

Spavin.

There is so much misconception among people generally about the nature of spavin and its cure, that I will include such illustrations as will show clearly the character and location of the disease. I first give various views of the hock, with an explanation of the different parts. Also views of specimens of a bad condition of spavin; first, a union of all the bones of the hock without any enlargement; next, the same condition with a large, bony deposit, the result of long-continued inflammation of the parts. This enlargement is what is called a spavin. Many pretend to be able to cure spavin by a medicine that will take off the bunch, claiming that it is simply a form of detached growth, and by removing this a complete cure will be effected. The fallacy of this pretension would be better understood could the specimens from which the illustrations are taken be examined.

The remedies generally used are nitrate of silver, corrosive sublimate, arsenic, muriatic, sulphuric, and nitric acids, or their combinations with other medicines of less severe character. These medicines applied to the surface deaden or destroy the skin and sub-tissues of the part, which, in the course of a week or two, sloughs off, leaving a bad sore. The operator exhibits this sloughed

off part, or a piece of cartilage prepared for the purpose, which he claims is the spavin. Or the medicine may be so prepared as to act as a severe blister. In any case, the unsuspecting owner is usually induced to pay a liberal sum, either as pay for

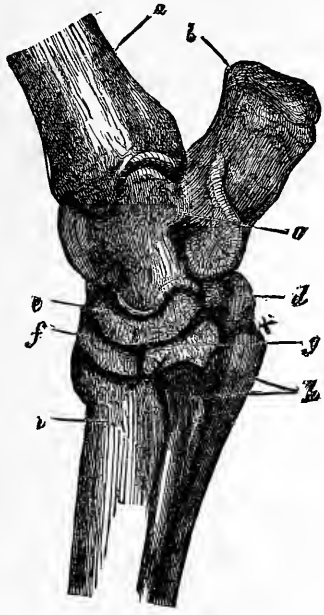


FIG. 644.—Back inside view of the bones of the hock.

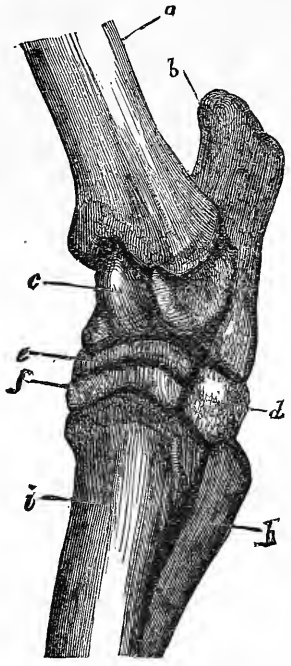


FIG. 645.—Front outside view of the bones of the hock.

a. Tibia; *b.* Os calcis; *c.* Astragalus; *d.* Cuboides; *e.* Navicular; *f.* Outer cuneiform; *g.* Middle cuneiform; *h.* Splint; *i.* Cannon, or shank.

the medicine, or to meet expenses, etc. This game is being played constantly all over the country.

There are innumerable patent cures for spavins, and concommitant difficulties, which are usually nothing more than ordinary blisters which act merely as counter irritants. In fact all the great secrets for curing spavins, etc., are but mere pretensions of the charlatan, and should deceive no one. During my early experience I frequently paid large prices for these pretended cure-alls, which did little more than convince me of the extent of imposition practiced in this way, until I had no confidence in any

one professing to doctor horses. Becoming finally acquainted with a well-known veterinary surgeon, Dr. Wm. Somerville, of Buffalo, New York,* I employed him to give me a private course of lectures, instructing me in the principles and treatment of the most common causes of sickness and lameness in horses, and I spent nearly a year in obtaining this knowledge.

Fig. 646.—Bones of leg and foot.

At the commencement of these lectures there were three interesting cases of spavin for treatment, two of them from distant cities. He explained, among other things, that he charged one hundred dollars each for treating these cases, guaranteeing a cure without blemishing; and that were the treatment for these cases understood by the local veterinary surgeons, whose charges were comparatively nominal, they would not have been sent to him at such large expense for treatment and shipping.

The better to explain the nature of spavins, I quote from the best description I can find of this disease and its causes:—

"There are two distinct kinds of bone spavin: The first is in all respects similar to splint, and arises from inflammation of the periosteum. It frequently comes on insidiously without causing much annoyance. The other form, arising from inflammation of the internal structures of the hock-joint, is frequently attended by caries or ulceration, and from the first produces intense pain and lameness, when the bones rub on one another.

* I give his exact method of treatment in the first method of firing.

"The hock-joint corresponds to the heel in man, and has no fewer than ten bones entering into its formation, an acquaintance with the arrangement of which is necessary before the complexities of hock diseases can be understood. The bones of the leg, (see Fig. 647,) the shank-bone *g*, and the two small splint bones behind *h*, support the lower layer of the bones of the hock. The cube-bone *d* rests principally on the shank-bone, and in a slight degree on the outer splint-bone. The middle wedgebone *f* rests entirely upon the shank-bone, and the smaller wedge-bone (not seen in the cut) presses in a very slight degree on the shank-bone, but principally or almost entirely on the inner splint-bone. Then the splint-bone sustains a very unequal degree of concussion and weight. Not only is the inner one placed more under the body, and nearer the center of gravity, but it has almost the whole of the weight and concussion communicated to the smaller cuneiform bone carried on to it. It is not, therefore, to be wondered at that, in the violent action of this joint in galloping, leaping, heavy draught, and especially in young horses, and before the limbs have become properly knit, the inner splint-bone, or its ligaments, or the substance which connects it with the shank-bone, should suffer injury."

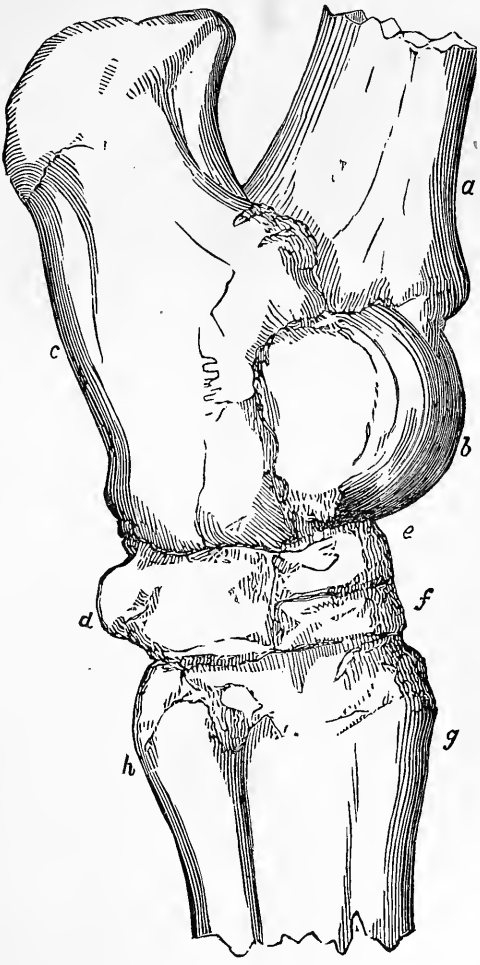


FIG. 647.—Bones of the hock enlarged.

Different views of the bones of the hock can be seen more clearly by referring to Figs. 644, 645, in the first part of this chapter. Also Figs. 648–651 show the various changes of struct-

ures produced. Figs. 648, 649 were copied from two interesting specimens loaned the writer by Prof. Cressy, of Hartford, Ct.

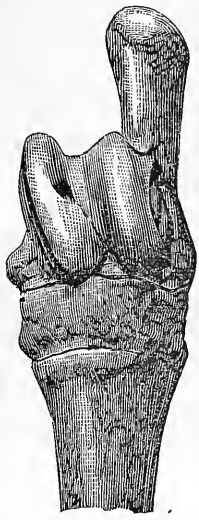


FIG. 648.—Union of all the bones of the hock without enlargement.

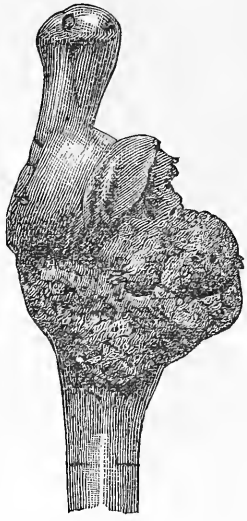


FIG. 649.—The same, with excessive bony enlargement.

The causes of spavin are numerous—altered bearing, predisposition from conformation or mal-conformation of the limb, but proceeding mainly from hard work, sprains, or any cause which excites inflammation of this part. But the most common cause lies in the breeding of horses, as very often a colt is bred from a spavined sire or dam, or both, when the colt is sure to inherit the same defect.

Symptoms.—The first symptom usually shown in spavin is a stiff moving on the toe, which causes a peculiar quick catching up of the leg, especially in trotting. This varies according to the amount of inflammation and its location, from being scarcely noticeable at first, and passing off entirely after going a little ways, to severe lameness or stiffness of the hock, which greatly improves or disappears when warmed up during a sharp

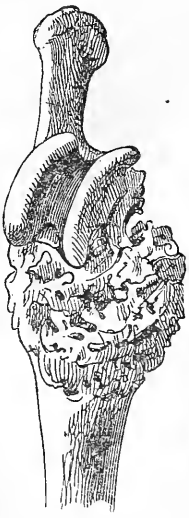


FIG. 650.

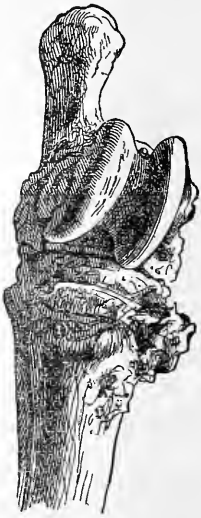


FIG. 651.

Showing a bad condition of spavin.

drive of a few miles, but appearing much worse after such a drive when the blood is again cooled. The hock is observed to be less freely used than the other. He is worse on the hard road. He limps considerably when he strikes his toe on a stone or the ground. If the leg be taken up and the joint forcibly extended or flexed, he will limp quite badly. Spavined horses generally lose condition, and from the pain caused by rising they frequently stand for a long time.

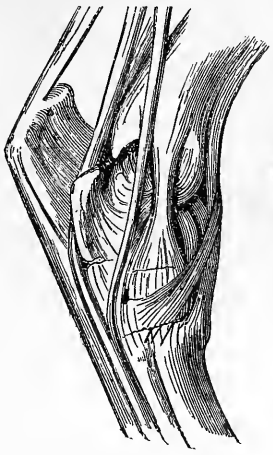


Fig. 652.—Healthy hock dissected.

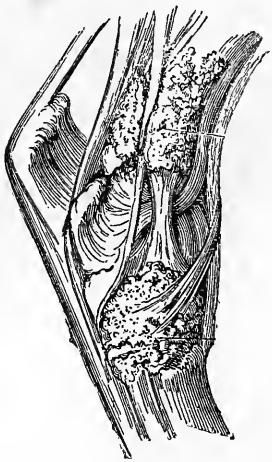


Fig. 653.—Diseased hock dissected.

If it is the result of a strain, causing acute inflammation, the lameness will not pass off by exercise so readily as it will after it becomes chronic.

Fig. 654.—Action when natural.

Fig. 655.—Action of badly sprained leg.

An enlargement usually makes its appearance from the fifth to the sixth week. Any prominence can be seen by standing in front of the horse about three or four feet from the shoulder, and looking back across the hock, or by standing behind the horse, and looking forward across the hock.

The effort the horse makes to relieve the heels by walking upon the toe, indicates the necessity of removing the shoe, raising the heel-calks, hammering down or cutting off the toe-calks, and rounding the toe.

Care must be taken not to mistake a natural fullness, known

as "rough hocks"; and it is always advisable to compare the one hock with the other. We frequently have inflammation or spavin uniting the small bones without the least outward enlargement. Fig. 648.

Quite often, before any enlargement appears, the trouble may be mistaken for hip lameness. But in this difficulty there is a peculiar dragging motion, and for want of muscular action the hip is sometimes fallen in or wasted; while in spavin the leg is lifted and brought forward easily, traveling mostly on the toe, and shows marked improvement by exercise.

Treatment.—If there is heat during the first few days, use cooling applica-

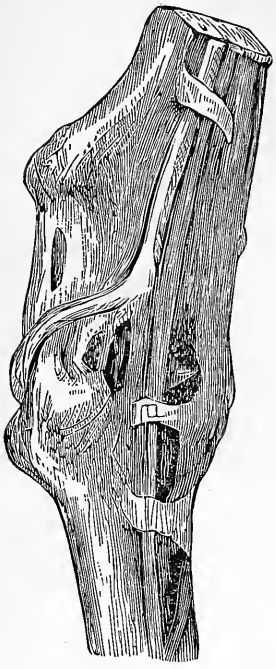


FIG. 656.—Showing situation of bone-spavin; a shallow groove being left in the ossific deposit for the passage of the oblique tendon of the flexor metatarsi, immediately under which the spavin is situated.—*Williams' Surgery.*

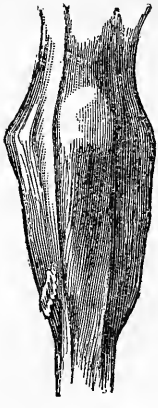


FIG. 657.—A healthy hock.

FIG. 658.—A Jack spavin.

tions, such as an ounce of sugar of lead to half a pail of ice-water, about two weeks, when the inflammation may pass off. A dose of physic may also be given. Or a very simple way, and according to my judgment the best, is to throw a strong stream of cold water against the part for twelve or fifteen minutes, repeating two or three times a day as before explained. If past the first stage, and the case has become chronic, the only reasonable treatment is counter irritation and rest, or keeping up sufficient local inflammation, without dissolving or blistering the skin, to arouse

nature sufficiently to produce anchylosis, or a union of the bones involved.

There are two methods of treatment for this: First, if not very

FIG. 659.—Small spavin.

FIG. 660.—Ordinary spavin.

serious, by blistering. Second, by what is termed "firing." This is done in two ways: First, by burning lines over the skin with a feather-edged iron sufficiently close and deep to produce an extensive external inflammation, but without breaking or destroying the skin. Second, by burning small holes into and around the diseased parts. On the following page are given a few of the best practical remedies.

FIG. 661.—Very large spavin.

Blistering is adapted for only simple cases, so that when serious, firing is the most reliable and effectual treatment. In case of either blistering or firing, the hair should first be clipped from two to three inches above and below the enlargement, and out to the middle of the hind and fore part of the leg. A favorite blister used by one of the best practitioners in the country is prepared and applied as follows:—

3 drams of biniodide of mercury.
1 dram of iodide of potass.
1½ drams of iodine in crystals, pulv.
1 ounce of blue ointment (mercurial).
1 ounce of lard.

Mix, and apply to the seat of the spavin three days. When the parts become sore, omit the treatment for the same length of time; then apply once in three days for two weeks, after which stop all treatment.

Or either of the following blisters may be used, which are among the very best:—

1 ounce finely powdered cantharides.
2 drams powdered euphorbium.
1 ounce lard.
2 ounces tar.

Mix. This is a very strong blister, and is regarded as very good.

Another favorite prescription is:—

2 drams corrosive sublimate.
1 ounce lard.
½ ounce tar.
2 drams cantharides.

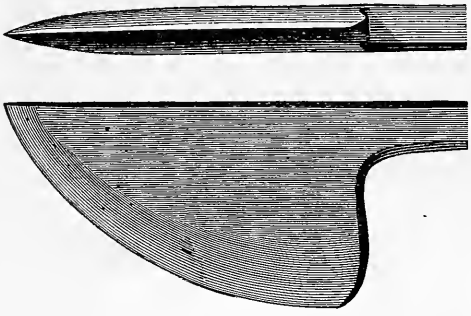
The following will also be found efficient:—

Equal parts of biniodide of mercury and cantharides, and three parts each of tar and lard.

The blister should be thoroughly rubbed on with the hand about ten minutes. Twenty-four hours afterward apply a little vaseline or oil, and repeat night and morning until the action subsides. This will prevent the skin from cracking as well as lessen the pain. After which, wash with castile soap and warm water. In no case should more than one leg be blistered at a time, especially if the horse is thin skinned and sensitive, as it produces serious disturbance and fever. A variety of prescriptions for blisters will be found under the head of the best remedies used, if it is desired to use blisters; also the most famous secret quack cures will be found under that head; but it is not advisable to use them.

Firing.

For firing, put the horse in stocks. If this is not convenient, the next best way is to bring a rope around the neck and fasten to the well leg; or still better, buckle a soft strap around the fetlock, and from a ring attached to the strap, pass a rope around the neck of the horse and draw short enough to raise the foot from the ground. Next put on a twitch, with the stick part at least twenty inches long; it should be so arranged as not to hurt the horse until the instant of touching with the iron, when the head should be thrown up a little with a slight jerking motion, to divert his attention from the pain of the firing.



Lig. 662.—Feather-edge firing-iron. Three-fourths size.

Fig. 663.

I give two illustrations of the firing part of the iron, reduced in size about one-third. The larger the iron, the longer it will retain the heat. The blade should be of steel (of the form given in the illustration), a little more than a quarter of an inch thick at the back, and gradually thinned down to the edge, which should be about one-sixteenth of an inch in thickness, and nicely rounded. The handle may be nothing more than a straight round bar of iron, from sixteen to seventeen inches long and turned back at the end. It is necessary to have at least two irons, so that while one is being used, the other can be heating. It should be heated to a dull red color, and when taken from the fire the edge quickly run over a board or plank to make it smooth. When the edge is turned dark, draw perpendicular lines on the leg, as shown in Fig. 664, from top to bottom. They should be about two inches

apart at the top, and not drawn deeply. Lay the edge where desired to start from, and draw steadily and gently to the bottom. Then commence at the top and make cross lines, obliquely, about half an inch apart. Start the point of the iron from the line at the right or left, and draw toward the center, as shown in Fig. 664.

The skin should not be penetrated or cut through, as it would leave a blemish. The cuticle is simply to be destroyed, and a dark brown impression left upon the skin, from which there will exude a glutinous substance soon after the operation. If the iron is red or too hot, there will be great danger of burning through; though

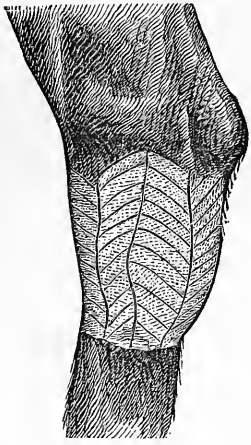


FIG. 664.—View of lines as they should be made with feather-firing-iron.

FIG. 665.—Bad method of firing. The lines cover too small a surface.

if the operator is dextrous he can use it quite safely by drawing it proportionately light and quick, but the work cannot be so well done as with an iron that is of a dull red color, or quite dark at the edge. With such an iron, if the first line is not drawn quite deep enough it can be repeated until the right depth upon the cuticle is obtained, which will be indicated by its color. If the lines are drawn much nearer than half an inch, there will be danger of sloughing, while if too far apart there will be proportionately less inflammation produced. They should be of a certain depth and distance apart, and crossed as little as possible to avoid breaking the skin. If this is done neatly, when the healing process takes place, the creases formed by the iron will be drawn

together, the hair grown over, leaving no visible trace of the firing. After the operation the horse should be put away in a box-stall. On the following day a little grease, vaseline, or oil should be rubbed over the part, which will keep it soft and prevent cracking. This may be repeated at any time afterward, should it appear too dry. Should any of the cracks break and threaten to make a sore, dust on a little of the magic healing powder, which will stop it immediately unless very severe. No bandaging or any such means should be resorted to. Simply see that the horse does not bite or rub the parts.

This method of firing is the one that has been most generally used. It is very painful to the horse, and requires considerable practice to do it well, although there is no particular sleight or secret in doing it beyond making the lines over rather a large surface, and as near each other as can safely be done without causing so much inflammation as to extend across the division and blemish by breaking or destroying the skin between. The next point is depth of the firing. This can be learned reliably only by practice. The deeper the firing, the more extensive the inflammation produced, though in no case should it be carried deep enough to break the skin, as this will surely cause a blemish, while in very slight firing there will be proportionately less inflammation, and to that degree less effective.

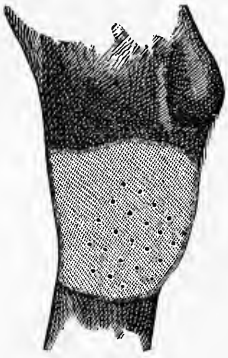


FIG. 666.—Dots showing usual number and location of punctures in firing.

THE PYRO-PUNCTURING PROCESS.

The method of firing now found to be most effective for this difficulty, and that used most generally by the best practitioners, is the pyro-puncturing process. It is much easier done, more simple, not so liable to blemish, and far more effective. I give two forms of iron; one representing about three-sixteenths of an inch, the other about an eighth of an inch or less in diameter. The rule is, the larger the iron the farther apart must the holes be made, and the smaller the iron the closer together. The principle is to make the punctures as near as can be done safely without producing so

much inflammation as to cause the skin to break or slough between them. The average distance apart is from three-fourths to one inch for the larger iron, and half an inch for the smaller iron, observing not to go near the vein.

If the horse is valuable it is best to use the smaller iron, as there

FIG. 667.—Small Pyro-puncturing iron.

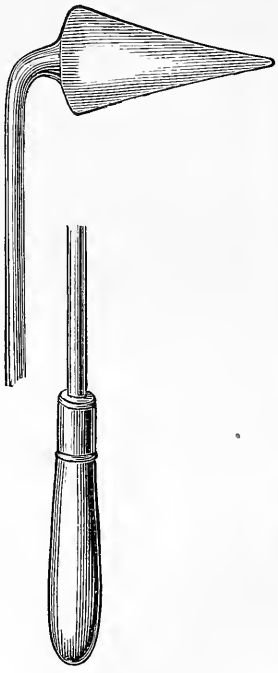


FIG. 668.—Large Pyro-puncturing iron.

FIG. 669.—Small Pyro-puncturing iron. The wire represented too small.

is less danger of blemishing. The part of the iron used should be sufficiently long to enable puncturing as deep as desirable. I give illustrations of two such irons; one representing the round part drawn out with considerable bulb behind to give sufficient body to retain heat; the other a bulb of iron with a hole punched, into which is fitted a piece of steel or iron wire of suitable size. These

fine pointed irons for pyro-puncturing should be used only when at a white heat, and never when cooled to a red heat. The reason for this is that there is much less pain felt when the iron is at a white heat, as the sensibility is almost immediately destroyed. It is desirable to have three or four irons heating at once, so as to be sure of having one continually at white heat.

The method of using it is to barely touch the skin at first to mark the points to be punctured, which should be extended out some little distance beyond the line of enlargement or immediate seat of trouble (as shown in Fig. 666). Then repeat, burning much deeper each time until the holes are made to a depth of about three-eighths of an inch, more or less, according to the severity of the case. Where there is much enlargement, penetrate to the bone proper over that part. When the firing is complete, rub on thoroughly a strong blister. The following simple Spanish fly blister is good:—

1 ounce Spanish flies.
½ ounce liquid tar.
2 ounces lard.

Mix, and rub on thoroughly from five to ten minutes, putting on a pretty thick application, and leaving on about forty-eight hours, when wash off with warm water and soap. When dry, rub on some grease or lard; and let the animal rest three weeks.

The principle is to keep the horse quiet long enough to give time for exudate to be thrown out and unite the parts involved, and this requires from three to five or eight weeks, and in some obstinate cases possibly even longer, depending upon age; the younger, the more easily and quickly this will be done, while the older the horse, and the less constitution, the slower and more difficult it will be to do. In any event, it must be continued or repeated, until the lameness disappears, after which work moderately for a while.

If, after a couple of months or so, there is any perceptible lameness or soreness, an ordinary biniodide of mercury blister may be applied once or twice, as the case requires, or the firing may be repeated, as before stated. The point is to keep up sufficient counter irritation to make the cure complete. It will also aid in removing any enlargement that may remain.

Ring-bone.

The treatment for ring-bone, splints, curbs, and spavins is practically the same. If there is inflammation, the result of recent

Fig. 670.—Joint anchylosed in ring-bone, without enlargement. The roughened appearance of the bone the result of inflammation of the periosteum.

Fig. 671.—Ringbone. The joint anchylosed and enlarged.

strain, use cooling applications, and give the horse rest until it passes off, when counter irritation by blistering or firing must be resorted to.

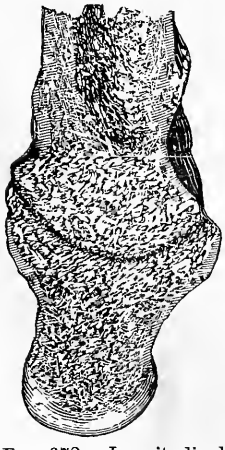


Fig. 672.—Longitudinal section of joint after anchylosis.

A ring-bone is a bony excrescence, or enlargement, about the pastern, most frequently occurring in the hind leg. Sometimes it does not cause much lameness, while again the lameness may be very severe, and perhaps incurable. This will depend much upon the location of the enlargement upon the joint. Should it be upon the center of the bone, it may not occasion any trouble; but if upon the margin of the joint, it is liable to cause much lameness. Fig. 671, taken from a photograph, is a front view of an enlarged anchylosed joint, or ring-bone; Fig. 672 is a view of another specimen cut through the

center, showing the joint grown solid. I include an illustration of quite a bad ring-bone, and the same clipped, lined, and also dotted to show how the firing should be done by the pyro-puncturing process.

At first there may be a somewhat tender and yielding enlargement, which, in the course of time, becomes a hard bony formation.

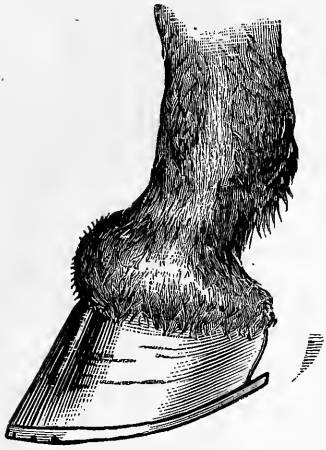


FIG. 673.—Ring-bone as it usually appears.

FIG. 674.—As a ring-bone should be fired by the first method.

Second, the horse may make an effort to relieve the pressure from the heels or toe, according to the location of the inflammation. Should he raise the heels, then raise the heel-calks and round the toe. If on the other hand he seems to throw pressure upon the heels, then lower the heel and round the toe. In the fore feet, at any rate, it will be necessary to round the toe sharply, which will greatly relieve the strain upon the joint by enabling the foot to roll easily, or turn upon the toe. The best method of doing this is by the Roburg shoe, illustrations of which are given in "Shoeing," and "Navicular-Joint Lameness." Clip the parts, as shown in Fig. 675, then blister or fire, as explained for spavin. There should be no blistering or firing around the heel under the

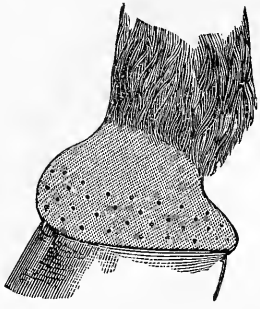


FIG. 675.—Method of firing by the Pyro-puncturing process.

fetlock, as this would cause breaking, or an irritation of the skin. which would be very annoying and difficult to heal.

Side-Bone or False Ring-Bone.

Side-bone, properly speaking, is not exostosis, but ossification of an already existing structure, it being ossification of the lateral cartilages of the ospedis, or bone of the foot. It is most common in the fore feet, especially where the pasterns are short and straight.

Fig. 676.—A well-defined curb.

Symptoms.—The lateral cartilages, which in health are soft and flexible, become enlarged, project above the hoof, and are hard and bony. While the inflammatory process is going on, there is heat and pain in the part, and consequently lameness, which in most cases ceases when the ossification is completed; but there is always a degree of stiffness observable, and the lameness is apt to return if the horse is much used on the road.

Causes.—Short, upright pasterns predispose to them; they are most common in heavy draught horses, used for teaming on the road. Sometimes it arises from a tread from another horse, which causes inflammation of those structures, which is followed by ossification of the cartilage.

Treatment.—The same principles must be observed in all these cases. Rest is most essential; continued cold applications, by making him stand up to the fetlocks in soft clay, with cold water frequently applied, would be the proper treatment until the acute stage has passed, after which repeated blistering, or, if thought necessary, firing would be advisable.

Curb.

This is a swelling upon the back part of the hock about five or six inches from the point (an illustration of which is given in Figs. 676, 678). If there is heat and tenderness, with more or less lameness, use cooling applications. The quickest way to reduce inflammation of this kind is to direct a stream of cold water against

the part for ten or fifteen minutes, and repeat at intervals. It would relieve considerably to raise the heels of the shoe, and when the inflammation subsides, blister repeatedly. If this does not succeed, fire the part.

Curbs are not usually difficult to manage. I include a remedy which is very effective in removing chronic enlargements of this kind. It was first brought to my notice by being used upon one of my baggage-horses during one of my campaigns in Ohio. I purchased this horse cheap on account of his having a large curb,

FIG. 677.—An ordinary curb.

FIG. 678.—A very bad curb.

which, though it did not cause lameness, blemished the leg badly. I noticed my manager, Dr. Williams, occasionally rubbing on some medicine. It seemed to me like a waste of time to attempt doing anything for it, and so expressed myself. He said, "Wait, and I will show you the effect." He simply applied the remedy two or three times a week, and in two or three months, to my surprise, the enlargement had almost entirely disappeared. Since then several cases of morbid joint enlargement have been cured by applying this remedy occasionally for two or three months, one especially bad, caused by an injury down near the hoof. The following is the remedy:—

1 ounce each of oil origanum, oil of spike, oil of amber, spirits of turpentine, and camphor.

Mix thoroughly, and rub on the enlargement two or three times a week.

The following is the treatment used by one of the most successful veterinary surgeons in this country:—

First, put on a high-heeled shoe, then take boiling water, and with a sponge have the curb well bathed for about ten minutes. Then apply the following liniment:—

1 ounce aqua amonia,
2 ounces tincture of iodine,
3 ounces glycerine.

Apply to the part two or three times a day, until quite sore. Then stop for a few days, when repeat the medicine as before, and so continue until again sore.

Bog Spavins and Thorough-Pins.

This disease may be called wind-galls of the hock, caused usually by strain and overwork, but principally by lunging back upon the hind legs. When the swelling is inside and front of the hock, it is called a bog or blood spavin. This is caused by a distension or rupturing of the membranes which cover the synovial cavity of the joint. The swelling is soft, and yields to the pressure of the finger.

Fig. 679.—Bog or blood spavin.

Thorough-pin is of the same character—an enlargement on the back, inside of the upper part of the joint, where in its natural condition is a hollow. This swelling extends across under the tendon, forming a tumor between the calcis and thigh bone. It is simply a rupture of the synovial membrane allowing the synovia to escape. By pressing upon one side, the swelling is pushed through to the other side; and sometimes there is connection with swelling in front. These enlargements rarely cause lameness, though sometimes they may cause inflammation of the parts involved.

There is no satisfactory treatment for these difficulties. Blistering sharply is the treatment usually pursued. If this fails, firing is the last resort. There is no difficulty in bringing down an enlargement of an ordinary bog spavin by blistering, but as soon as the horse is put to work or strained in the least, it is liable to come

back again. There is a remedy I have found to work with great success in the removal of these synovial enlargements during their acute stage.

In making a campaign through Wisconsin, in 1867, one of my trained horses acted so rebellious oneday that I was compelled to force him back sharply with a whip, throwing him upon his haunches. Soon after the drive, when cool, he acted quite sore and stiff, showing quite an enlargement of the hock. I supposed the horse was spoiled. During the day a half drunken fellow, in looking at the horses, said that he could "remove that enlargement, and cure it." Considering the case incurable, I paid no attention to him at the time. The man feeling annoyed at the indifference with which he was treated, said, "I suppose you think I don't know anything about horses, but if you will take some soft soap and salt, rub on the part thoroughly at night and wash off in the morning for two or three times, I'll warrant you that will be cured."

FIG. 680.—Thorough-pin.

It occurred to me that it would do no harm to try the experiment, so I directed the man who had charge of my horses to apply the soft soap as directed. He did so, and next morning the swelling was greatly reduced; and after repeating two or three times, it entirely disappeared. In consequence of hard driving and strains, the parts became puffed to a greater or less degree several times afterward, but always yielded to a few applications of soft soap well rubbed in.

While this remedy will work well on acute cases, its effect is not satisfactory upon old, confirmed cases; for if the enlargement is brought down, sharp driving or straining of the parts will usually bring back the trouble. I consider trusses and all that sort of thing of no special account in this difficulty. I have been told repeatedly of parties who punctured these enlargements to allow the secretions to run out, that in each case so much inflammation was excited in the joint as to cause the loss of the horse.

Blood spavin is supposed to be caused by a distension of the

large vein which passes through the integuments involved in bog spavin. I do not know any distinction between them worthy of mention, especially as there is no treatment given other than that named.

Capped Hock.

Fig. 681.
Capped hock.

This is an injury or bruise at the point of the hock, and is usually caused by striking the parts against some hard object. If the inflammation is acute, use cooling applications. When the inflammation has subsided, use any ordinary stimulant or blister recommended for the purpose.

Wind-galls.

Wind-gall is the name given to those soft, puffy swellings found at the back part of the fetlock-joint, from a supposition that they contained air. They consist of enlargement of the little sacs, or bags, which are always found to contain a mucous fluid wherever tendons pass over joints, as at the back of the fetlock. This form may be called *simple wind-gall.* In other cases, the distension is caused by an increased secretion and bulging of the capsular ligament of the joint itself. This form may be distinguished as *complicated wind-gall.*

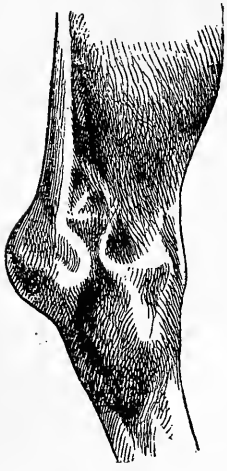


Fig. 682.—An ordinary capped hock.

Few horses that have done any work are free from them, and unless dependent on some more serious lesion than simple distension of these *bursæ mucosæ*, they are of no consequence.

Causes.—Hard work is the well-known cause of wind-gall. In rapid motion, or heavy draught, the friction of the tendons is greatly increased; consequently an increased secretion of synovia is required, and takes place in all synovial sacs during exercise; but if the action be not so violent as to strain the parts, it is speedily re-absorbed. On the other hand, if the exertion be inordinate,

these little *bursæ mucosæ* become injured, inflammation is set up, and they become permanently enlarged.

Again, the exertion may be so violent as to cause sprain of the tendon, which extends to the capsule, or the joint itself may suffer, and cause distension of the capsular ligament constituting complicated wind-gall, which is more serious.

Symptoms.—Simple wind-galls are little puffy swellings, seen at the sides of the tendons as they pass over the fetlock-joint, most common on the hind leg. They are soft even when the weight is thrown on them. It is very important to be able to distinguish between simple and complicated, or between the harm-

FIG. 683.—A natural, healthy joint.

FIG. 684.—Showing two enlargements.

FIG. 685.—Clearly marked condition of wind-gall.

less and what is not harmless. If situated between the tendon and the suspensory ligament, it depends on distension of the bursæ through which the tendon passes; if it feels hard when the other leg is held up, and is accompanied with slight lameness, the tendon is implicated. When placed in front of the suspensory ligament, between it and the bone, it is accompanied with increase of synovia in the joint itself.

Wind-galls generally appear suddenly.

Treatment.—There are three methods of treatment: First. During the acute stage they can be easily removed by any firm but even pressure by pads and bandages, with cold water frequently applied.

Second. When it has been long neglected, or the case is complicated, counter irritation, or any good stimulating liniment or light

blister may be used. The biniodide of mercury ointment may be well rubbed in several times, or a cantharides blister may be used.

Third. Letting the synovial fluid out. This is done with an instrument called "the aspirator," which is a bottle attached to a small suction pump, or, more properly, a syringe attached to a bottle, and worked so as to draw out the fluid. The method of operating is as follows: Force the needle of the aspirator into the wind-gall and draw off the fluid. When it is all drawn, inject a little of the following solution into the part:—

½ ounce tincture iodine.
20 grains iodide of potassium.
3 ounces water.

Bandage well and keep the parts wet with cold water. The

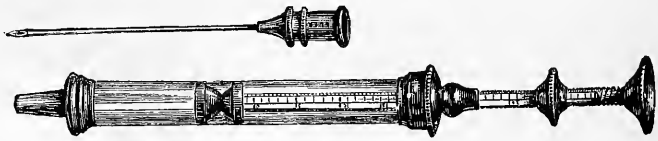


Fig. 686.—Graduated hypodermic syringe.

bandages to remain on from three to five days. This produces an adhesive inflammation of the part. This treatment can be used with safety in all cases where there is enlargement of the sheaths of the tendons. It cannot be safely used in what is called a blood spavin, because there is danger of puncturing the vein, and secondly, may extend into the true hock-joint, which would induce so much inflammation as to produce a stiff joint, or even suppuration of the coverings of the bone, which would finally destroy life. The hypodermic syringe, shown above, may be used.

Navicular-Joint Lameness.

It is estimated that this is the cause of fully nine-tenths of all serious and obscure cases of lameness in the fore-feet. I refer to it at the commencement of the Medical Department, page 745, as one of the principal causes of trouble, which it is important to know how to treat. If neglected, or not treated properly, in from three to six months, such changes of structure, or degeneration, take place in the parts as to make cure impossible; when it is termed "groggy, or chronic lameness," which of course spoils the horse; and when it is seen that it is the best horses, usually favor-

ites, that are perhaps worked irregularly, that are most subject to this lameness, the importance of being able to treat it successfully when it arises, can be seen; and the treatment, too, is so simple, and easily applied, during its early or acute stage, that it certainly cannot be difficult or impossible, by the directions hereafter given, for any one to apply it. On this account I have made a special effort not only to make the treatment of this difficulty so full and comprehensive that such cases when they arise may be easily understood and attended to promptly, but to add such explanations and illustrations from the best authorities, as will show the serious effect that may follow when neglected or not treated properly. In reference to this, a very able author says:—

FIG. 687.—As the horse usually rests his toe upon the ground.

"This is a strain that does more mischief than any other, and entirely from the circumstance of its producing scarcely any lameness in the walk. A horse, therefore, when strained in the coffin-joint, and having no lameness, or scarcely any, in the walk, is usually put to work, or what is nearly as bad, is turned to grass without any regard to the situation, where he is often liable to be driven about. If, instead of this, it were treated like other strains whose symptoms are more apparent, and which produce a greater degree of lameness, it would soon get well, and with greater certainty than a strain in the back sinews. But as it is a strain in the coffin-joint, it is the most intractable kind of lameness we meet with, because it is nearly always neglected at its first occasion."

Symptoms.—It sometimes occurs in an instant, as by a horse stepping on a round stone, running in the field, etc., when he may at once be quite lame; at other times its progress is slow. Some peculiar formations of the foot are more subject to it than others. When the result of sudden strain, there will be considerable heat in the back part of the foot, with well-marked lameness. When it comes on gradually, a slight tenderness is observed, particularly at starting, which goes off with exercise. This gradually increases;

the foot is found hot, and as a result of the increased heat, contraction may set in, the hoof becoming dry and brittle. He steps on his toe, and when standing, points his foot, that is, places his foot in front, resting on the toe; and if both feet are involved, which is not uncommon, alternating the feet. Contraction is not an invariable symptom, as feet are subject to it that are entirely free from contraction.

FIG. 688.—Usual appearance of foot with chronic coffin-joint lameness.

Often the foot is found to be round and apparently healthy, the most careful examination by the owner, or smith, not enabling him to locate any cause for the trouble. In ordinary cases the horse will show no apparent lameness while on a walk; but on a trot may flinch considerably, showing a great tendency to stumble.* Driving down-hill, or on a rough, cobbly road, will greatly aggravate the lameness, because going down-hill increases the force of concussion; and a stony or uneven road so wrenches and strains the joint, or exposes the frog to such incidental pressure, as to greatly increase the pain and soreness. In some cases of acute strain, the lameness may be quite marked, the horse being scarcely able to walk, and when he does, keeping the foot flexed by walking upon the toe, and when standing, resting the toe upon the ground. As this acute stage passes off, which will usually be in one or two weeks, the animal will seem to have grown much better, at times perhaps appear quite well, then grow suddenly worse again, depending upon the part of the joint involved and the road he is traveling on. He will go better on hard, smooth, sandy roads, but on soft, yielding ground, is liable to grow lamer, if the

*In some cases, usually fast trotters, the horse may at first only point, and gradually show a little soreness or stiffness at starting, or what is termed bobbing—dropping the head. Irritation in these cases is induced very slowly, as hereafter explained. The principle of treatment is the same,—prompt removal of the cause of irritation, developing healthy circulation in the parts, and aiding mobility.

sole is thin and the frog prominent, because of the increased pressure upon the frog, and thence upon the parts involved, by the foot setting into the ground. As the lameness continues, more or less change of structure takes place in the foot, a gradual drawing in of the quarters, the foot becoming perceptibly smaller than the opposite one, the heels higher, the frog smaller, and the sole more concave, the hoof showing a more glossy, hard appearance. The shoe will invariably be worn round at the toe. A result that often follows is a shrinking or wasting of the muscles of the shoulder, called "sweeny," which is caused by a want of properly exercising them. The symptoms are about the same, so far as the

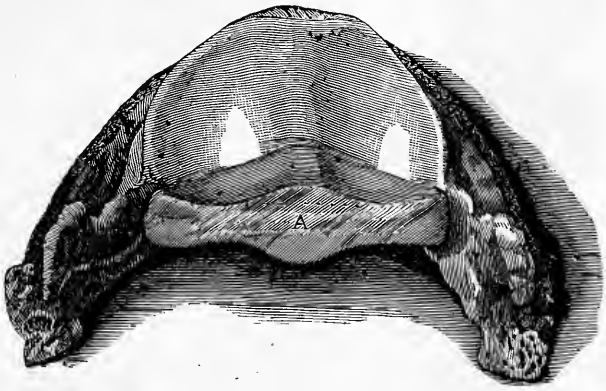


FIG. 689.—Back view of coffin-bone and navicular-bone attached in place.

lameness goes, whether the mischief has extended to ulceration or not, the history of the case only guiding in enabling to determine how far this has gone. Of course these conditions will vary in degree, as there may be only a slight extent of ulceration, or a high degree of simple inflammation. Yet, in the former case, the lameness will not be so marked as in the latter, notwithstanding the prospect for recovery will be much less.

We will now presume a horse, without any apparent cause, to show a little lameness, and we desire to make a careful examination. First, is there any possible cause from recent shoeing, such as a badly-fitted shoe, driving the nails too close, or pricking? Let the shoe be taken off carefully, by raising each clinch in succession, and pulling the nails out. Now tap and examine all parts of the foot carefully, and especially if there is any bruise

or corn at the inner heel, or at any part of the sole, which will be noticeable by being red and sensitive to light tappings of the hammer, or to squeezing of the pinchers. It is always best to make the most thorough and careful examination, so as to give assurance of being able to point with more certainty to the difficulty under consideration. Pressure with the thumb over the middle of the flexor tendon, on its inner side or its outer, as deeply as can be reached in the hollow of the heel, the foot being bent back, causes pain; or catching the foot in one hand and the ankle in the other, and while twisting a little, pressing against the tendon will cause considerable flinching. Tapping lightly upon the bar or sole, on each side of the frog, will cause flinching. Next, if the horse is taken by the head and turned short around, he will show increased lameness.

Fig. 690.—Posterior view of bones of the foot.

Upon an examination of these cases by the owner or horse-doctor, if no cause of trouble is discovered in the foot, the lameness is supposed to be in the shoulder. Now there is no lameness that reveals itself more plainly than shoulder lameness; because when the muscles of the shoulder or arm are strained or injured, the mobility is so seriously impaired that the limb is lifted and brought forward with a sort of dragging motion. It is easy to see if a man were to injure his shoulder or arm, that with the greatest effort he would be scarcely able to lift it to put on his coat. But were the trouble in his hand, or below the elbow, he could do it without the least difficulty. The effect is the same upon the horse. By moving him back and forward, if the trouble is in the foot, or below the knee, the foot will be raised and carried forward naturally, but put down tenderly, as if trying to protect it from the force of concussion; whereas, if in the shoulder, as explained, the mobility of the limb is greatly impaired, which is shown by the difficulty with which it is raised and brought forward.

I would call particular attention to these symptoms, from the fact that after an examination by persons who do not understand the nature of the difficulty, and finding no apparent trouble in the foot, the conclusion is arrived at that it must be in the shoulder, which is treated with liniments, blistering, etc., as explained, without doing any good, not only punishing the horse unnecessarily, but occasioning a loss of valuable time.

I would also remind, in this connection, that when the lameness continues in one foot for some time, on account of throwing the weight so much upon the opposite foot to relieve the lame one in standing or walking, there is liability to bring on the same

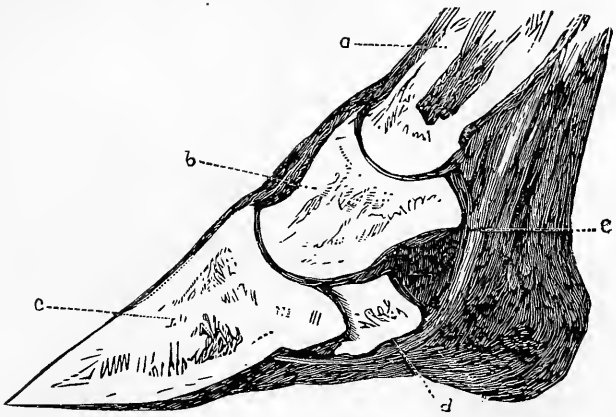


FIG. 691.—Position of bones of the foot too oblique.

a. Pastern bone; *b*. Coronary bone; *c*. Os pedis, or coffin-bone; *d*. Usual seat of the lameness; *e*. Perforans tendon.

trouble in the well one,—a not uncommon occurrence,—when the lameness will be equally marked in both fore-feet. The horse will go worse when the heel is lowered by putting on a thin shoe, or by losing the shoe, and will go better when the heel is raised, and especially so if the toe is rounded so as to aid mobility.

Causes.—The coffin-joint is composed of three bones; viz., the lower or pedal bone, and the navicular and pastern bones. By referring to Figs. 365 and 392, in chapter on Shoeing, and Figs. 679–688, which were copied and engraved from photographs of a manikin, and also from a natural foot, showing different views of the bones, ligaments, and tendons of the parts, a good idea

can be obtained of its location and character. By looking at Fig. 679, it will be seen that the navicular bone extends across the back edge of the coffin-joint; at Fig. 686, that the flexor tendon passes down under it, and inserts itself into the lower surface of the pedal bone. This supports the navicular bone when weight is thrown upon the limb, as the back part of the small pastern rests upon the navicular bone. Now, if from any cause irritation is set up in the synovial membrane of this small bone, or of the

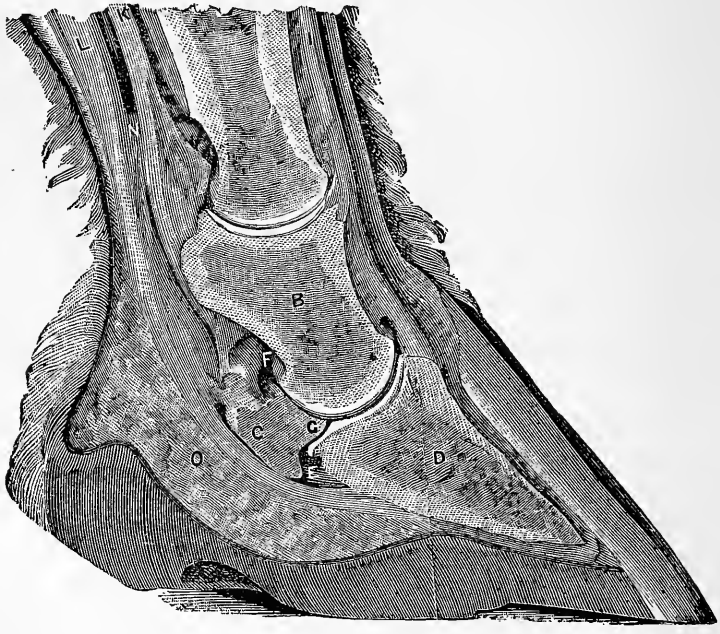


FIG. 692.—Natural position of bones of the foot.

sheath of the tendon which supports it, or of the surrounding parts, whether by sprain, concussion, injury, contraction, improper shoeing, changing the obliquity of the foot, that is, raising or lowering the heel too much, allowing the toe to grow too long, or any cause of changing the proper adjustment of the foot, etc., the effect is practically the same in causing inflammation and lameness.

The best authorities agree that the most common indirect

causes of this lameness are raising the frog from the ground and contraction. I copy the remarks of an old author of high standing on this cause, who says:—

"When the foot is in its natural condition, the frog is its strong point of support; and if this support is removed by paring, or by the use of thick-heeled shoes, which raise the frog from all possible contact with the ground, the support is weakened, and there is necessarily great strain thrown upon the tendon. This is caused by pushing the coronary against the navicular bone, and which, being repeated at every step or jump the horse takes, strains the tendons, or causes inflammation. By contraction, because in proportion to the drawing together of the heels, there will be a compressing or forcing upward of the arches of the commissures and horny frog against the tendon and navicular joint, impeding the action of the joint generally, and liable to cause inflammation of the synovial membrane, ulceration, and change of structure; it also destroys the natural position of the limb by making the pastern joint more perpendicular, which, as has been mentioned, increases the jar of the corona on the pedal bone. So that we have involved the lower surface of the navicular bone, its synovial membrane, the flexor tendon which plays over it, and sometimes the upper surface, when it is called coffin or navicular-joint lameness."

Another author says:—

"Disease of the navicular joint is the chief danger to be apprehended from a good-looking strong foot, just as the open, flat one is prone to laminitis, and is rarely subject to disease of the navicular joint. The reason of this immunity on the one hand, and the contrary on the other, is this: The open foot, with a large spongy frog, exposes the navicular bone and the parts in contact with it to constant pressure in the stable, so that these parts are always prepared for work. On the other hand, the concave sole and well-formed frog are raised from the ground by our unfortunate mode of shoeing, and when the whole foot is exposed to injury from battering, and in addition to the tendon which plays over the navicular bone presses it against the os coronæ, the unprepared state in which this part is allowed to remain, is sure to produce inflammation, if the work is carried far enough."

In 1816 an English veterinary surgeon, James Turner, was the first, after careful observations and numerous dissections, to call attention to the causes of this lameness and its treatment. His explanation is so good that I will include it also here, though experience has since proved, as explained, that contraction is only one of its causes:—

"The next deviation from nature is the passive state to which the foot is submitted, at least twenty-two or twenty-three hours

out of twenty-four, and sometimes for several consecutive days. Let this be compared with the few hours during which the feet of a horse at pasture are in a quiescent state, and there will be no cause of surprise in the change of form and position, and character, and the state of contraction which takes place in the foot deprived of its natural pressure and motion.

"The first indication of contraction is the gradual displacement of the navicular and coffin-bones. They ascend within the hoof. An unnatural arch is formed by the ascent of the frog, and the delicate synovial membrane lining the joint is crushed and bruised by the very material which nature has bestowed as a defense. This bruise of the synovial membrane lining the joint is the veritable source of the complaint, the actual cause of the whole not consisting in the wear and tear of the part, but having its origin in rest. It is engendered in the stable, but it becomes permanently established by sudden violence out of it. General contraction of the foot of the horse may take place to a great extent with comparative impunity; but it is a partial contraction or pressure which is the root of evil."

Prof. Williams, our best modern authority, in relation to the cause, says:—

"I have stated my opinion that generally the alteration of the direction of the bony column by the shoe, or by a natural upright conformation of pastern, is the great cause. In addition to this violent interference with the designs of nature, the elevation of the heels furnishes additional cause of concussion to those already stated, by removing the frog from the ground; the frog being elastic, tough, and strong, intended to touch the ground and diffuse concussion, as well as to prevent slipping at each step the animal takes. When left in its natural condition, it is a large, tough, softish body, giving way to the pressure of the fingers when manipulated, expanding each time the foot is put to the ground, the commissures at its sides admitting of this expansion without the other parts of the foot being interfered with. So long as it touches the ground, the sensitive parts within, and particularly the navicular bursa, for which it furnishes a soft bed, rests upon a resilient body, free from concussive danger. Besides furnishing this soft bed, it performs another important function, being elastic within and without, it assists the flexors in the first act of elevating the foot from the ground, and it does this in virtue of its inherent power of assuming its original shape when the superincumbent weight is taken away from it. Thus, whilst on the ground, and bearing its proportion of weight, it is flattened from side to side, bulging into the commissures and cleft, ready at every movement, like a piece of india-rubber, to assume its proper form when the least portion of the weight is taken from it. When the flexors are acting, it becomes narrowed from side to side, and deeper from surface to surface, and during this assumption of its natural form, it gives an upward impetus to the foot, which is of essential importance to its easy elevation. The removal of this frog pressure during long periods of rest

in the stable is also a fertile source of disease, because the frog becomes hardened, and does not furnish a soft cushion for the bursa to rest upon."

I may, in this connection, add that there may be cases of this disease, though somewhat rare, in feet that are weak and thin, which are entirely free from contraction. In such cases it is supposed the cause is owing to the obliquity of the joint being so great, that there is excessive play upon the tendon, the strain upon which produces irritation of the tendon at its connection with the navicular bone; or owing as well to the increased action of the joint, irritation of some of the soft structures is produced. It properly comes under the head of Cause of Irritation. But as there may be danger of parties, especially of trotting men, causing direct strain and inflammation of the part by lowering the heels too much, or suddenly, especially in the feet of horses that are exposed to much strain by being speeded, I will include the following explanations to show the impropriety and danger of doing so. It is stated in the chapter on shoeing, where thin shoes or tips are recommended, that this change must be brought about gradually. When traveling through Vermont, an intelligent trainer, who was a member of my class, wished to know the best method of keeping the feet of horses sound and free from contraction:—

FIG. 693.—Tendons and ligaments of the foot.

"Keep the adjustment and condition of the feet as nearly natural as possible," I answered, "by using thin steel shoes that will give the frog natural contact with the ground."

"That is my idea," said he, "but while in New York City, a man came along and persuaded the president of one of the horse railroad companies, where I was at the time employed, to put thin-heeled shoes on all his horses."

FIG. 694.—Attachment of perforans tendon to bottom of pedal-bone. From manikin of the foot.

I replied, "That would be all right, and an advantage for the average of horses; but there would be found an occasional one, perhaps one in every ten or twelve of them, that would grow decidedly lame by such shoeing; for if there was the least inflammation or weakness in the navicular joint or surrounding parts, giving such sudden and violent contact of the frog upon hard-paved streets would aggravate the irritation and produce direct lameness. Certainly the heels of such horses should be kept somewhat raised until the irritation passed off, when the heels might be gradually lowered sufficiently to bring about a good condition of circulation."

He stated in reply that about that proportion of the horses did become seriously lame; still they were worked right along without any regard to their condition. When in Buffalo, N. Y., I became owner of a horse that was very sore and lame, in consequence of excessive driving during the race week in that city, in conveying passengers to and from the track. He had been so shod as to let the frog come directly upon the ground. I found upon examination that the heels had been so bruised as to cause suppuration between the sensible and insensible frog, which was the cause of the trouble, and practically spoiled the horse. Now, putting on thin-heeled shoes would have been all right for ordin-

ary light driving on mud roads, but when subjected to such severe and continued concussion, they became a direct cause of irritation and disease. As a good illustration of this cause of danger, I copy the remarks of a very excellent author (White) on the danger of lowering the heels too suddenly and subjecting them to severe strain: "It has appeared in a great number of dissections of the feet of horses affected with chronic lameness, that the small bone of the foot, called navicular or nut-bone, is diseased either on the surface over which the great tendon of the foot passes, or on that which articulates with the small pastern and coffin bones." In speaking of the cause, he says: "I once knew an excellent trotting-horse that had won several matches. Thin-heeled shoes were put on his feet, but it was soon found that he could no longer trot; that when urged he would go into a canter. The shoes were therefore taken off, and a common shoe applied, but it was too late. He was no longer able to trot. And this, I have no doubt, was caused by inflammation of the coffin-joint, or of the parts connected with it, in consequence of lowering the heels and throwing so much stress on the tendon and navicular bone."

FIG. 695.—Excellent view of perforans tendon. From photograph of manikin of the foot.

In talking with an intelligent veterinary surgeon on this subject, he referred to a case in his own practice that had strained the perforans tendon. The owner called him in to treat it, and by proper management soon relieved the lameness; but in consequence of the horse's being driven and speeded too soon, there was a return of the lameness, which he again treated with success.

After nearly six months' rest, the horse was again put in training for a race, there being no indication of a return of lameness. At this point a new driver was employed, who took it into his head to put on thin-heeled shoes; the consequence was, the first time the horse was speeded, he again fell lame, when, notwithstanding all that could be done, the case became chronic and incurable.

As the first stage is that of inflammation, the object should be to use such means as will arrest this most speedily, before any alteration of structure takes place, which is usually in from three to six months; for as before explained, if allowed to go on far enough to produce a change of structure, or caries, the case will be past all cure.

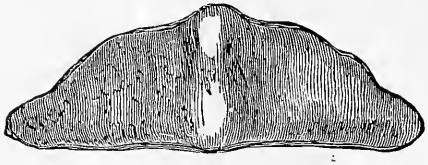


FIG. 696.—Inferior articulating surface of the navicular bone in a healthy condition.

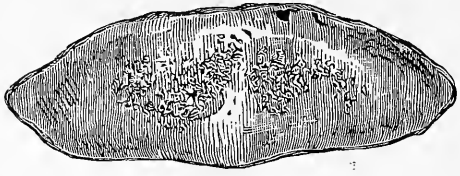


FIG. 697.—Indications of disease.

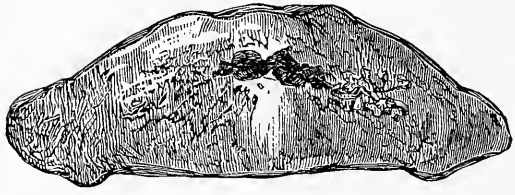


FIG. 698.—Inflammation progressed so far as to cause caries of the bone.

Treatment.—The first and most important condition of cure is *rest;* hence the horse must be at once taken from all work; he must not be, as is commonly the case, allowed to run even in pasture, or anywhere where there would be any freedom to run or walk around much; give him simply the limits of a large, level stall. Remove the shoe by raising the clenches, and pull out the nails one by one; then cut off or hammer down the toe-calk, and partly turn up the toe like the ground surface of an old worn-out shoe. Next, raise the heel-calks from five-eighths to three-quarters of an inch, fit the shoe nicely to the foot, and nail on, being careful not to wrench or hammer it unnecessarily in doing so. Two important points are

gained by this: First. Raising the heels from the ground throws the articulation of the pastern bone well forward upon the pedal bone, relieving pressure of the navicular bone from the tendon supporting it. Second, the removal of all pressure of the frog from the ground, which aggravates the inflammation, and rounding the toe, aids mobility, and thereby lessens the strain upon the joint.

If there is much lameness and heat in the foot, provide a tub or box, in which put water as hot as can be borne with the hand, and sufficient to come up even with the ankle, and let the horse stand with the foot in it for about an hour, keeping the temperature up to the point stated. Now take a bag, or cloth, into which put a sufficient quantity of bran to envelop the foot thoroughly, and tie loosely around the foot or ankle; pour on hot water moderately, and then let the horse stand, allowing the poultice in the meantime to become cool. If there is much inflammation and lameness, this method of hot fomentation may be repeated two or three times during the day, until all the inflammation subsides. The usual method of applying hot fomentations is to take several thicknesses of blanket or rugs, and after wringing them out of water as hot as can be borne, bring them around the foot loosely, and repeating at short intervals as they become cool; or a lot of bran or mud can be put in a box, and hot water poured on until at the temperature desired, when the foot can be placed in it up to the ankle, as before explained. The general practice is to tie a poultice of bran around the foot, and keep wet with cold water until the inflammation subsides, which would be good treatment; but if there is much inflammation and lameness, I would certainly advise, as far preferable, hot fomentations continued for about an hour, then alternating with cold, and repeated two or three times each day; but letting the poultice or cloths remain on until cool will be sufficient for reaction from the previous application of heat.

If cold applications are used, it is important that there be sufficient bran or wet cloths tied around the foot and ankle to keep the parts thoroughly wet and cool, until inflammation subsides, in addition to which the bottom of the foot should be kept stuffed with flax-seed meal, or anything that will aid in keeping the foot moist and cool. If this is done, after about a week the attack will usually pass off. After the acute stage has passed off, and

the wet cloths should be kept on until that time, even if there is no lameness, it is good practice to apply a sharp blister around the heel and coronet. It is in any event necessary, and may be even repeated once or twice, should there still remain any lameness. In the meantime, as before stated, the horse should be kept quiet, and if there is much lameness, there should be given in the first place a small dose of physic, with laxative, cooling food. This is all that is necessary to do in any ordinary case, and especially at an early stage.

It is next important not to expose the horse to conditions that would strain or injure the foot until fully over the effects of the injury. Consequently the horse at first should be driven very moderately for two or three months, or more. If the road is rough, frozen, or stony, there is such danger of straining, wrenching, or bruising the foot, and thereby causing a relapse, that the horse should not be driven, if it can possibly be avoided.

If there is any contraction of either or both quarters, there should be a special effort to overcome this also during the treatment. (For full details of doing which, see "Shoeing," page 681.) In opening the foot with the spreaders, great care should be taken not to produce any irritation. The quarters should be opened gradually. When the lameness has entirely disappeared, bring the frog again slowly to the ground to the extent it will safely bear. If any soreness is indicated, raise the heel a little, keeping the foot moist to prevent contraction, and when the soreness passes off, again gradually lower it.

Some authorities advise bleeding in the foot in connection with the treatment given; my judgment of this is that it is rarely necessary, and is advisable only when the horse is very fat and the lameness is very severe, or during its acute stage. The best practitioners with whom the writer has conversed on the subject do not bleed.

If, after blistering, there is still lameness, it is evident that the case has been running some time, and has assumed a chronic stage. In this event, the next and last step of treatment for cure is a frog seton. Prof. Williams's instructions for doing this are so good that I cannot do better than to copy them:—

"If the near foot is to be operated upon, the needle should be introduced from the frog upwards; but if the off one, from the heel

downwards, if the operator be not left-handed. It is seldom necessary to cast the animal. The horny frog must be well pared, and if the needle—a sharp-pointed, sharp, curved one—be passed quickly, the operation is generally completed before the animal knows much about it. It is necessary that care should be taken not to introduce the needle too deeply, as the tendon may be wounded; the point of the needle should be introduced into the frog about an inch from the toe and brought out midway between the bulbs of the frog and the anterior boundary of the hollow heel. The ends of the tape must be tied together, so as to form a loop, which is to be sufficiently long to admit of a little movement in dressing, but not so long as to extend to the boundary of the wall, or the horse, by treading upon it, will soon destroy it. Before the seton is introduced, it is usual to put on the shoe for the purpose of removing weight from the irritated frog. About three weeks or a month is the usual time for keeping the seton in the frog, dressing it daily and keeping the foot clean. After its removal, the frog must be examined, for usually it is 'under-run' between the two orifices by purulent matter; if such be the case, the detached horn must be removed and the exposed parts dressed with a little tar. If structural changes have not taken place, this plan of treatment will usually be found effective; but if the lameness continue after a month has elapsed after the removal of the seton, all treatment will be useless, and the animal should be put to slow work, or the pain removed by neurotomy."

This, of course, should be done by a competent veterinary surgeon.

I have been led to give particular attention to the study of this lameness, from the fact that many years ago one of my best horses, old Turco, became lame from this cause. First, there was noticed a slight flinching while moving on a trot. The feet being at the time very dry and hard, it caused a compression of the wall upon the soft parts. In the course of a couple of months I called in a veterinary surgeon, who was considered a good practitioner as well as good authority. He promised to cure the case in a month. His treatment consisted of simply applying a strong sweating blister to the coronet, keeping up a sharp counter-irritation for eight or ten days, but with no good results. I am satisfied that if at this stage of the case the foot had been thoroughly soaked by either hot or cold water, the quarters opened a little with the shoe well rounded at the toe, and the heels somewhat elevated, there would have been no difficulty in making a cure. But the surgeon did nothing more than apply a counter-irritant for a little more than a week. This seemed to be, and is yet, about

the extent of treatment used by the average of practitioners, which in the writer's judgment is not sufficient. Mobility must be aided as much as possible, to assist in preventing and removing any irritation caused by motion. In the course of time the foot became narrower and higher at the heels, the frog smaller, and the convexity of the sole greatly increased. Notwithstanding I had at various times during this period consulted with different veterinary surgeons of considerable reputation, the treatment recommended was merely palliative, and practically did no good. The nearest any of them came to giving any relief, was in putting on a convex shoe to relieve contraction, and blistering the coronet, for which instruction the writer was charged twenty-five dollars, but the case had run too long, and the treatment did no good. Now, with the treatment here given, it would have been a very simple matter to have relieved this case, if taken in time. But not knowing anything about the proper treatment myself at the time, a valuable horse was ruined. In some simple cases the effect of raising the heels and rounding the toe is often quite remarkable.

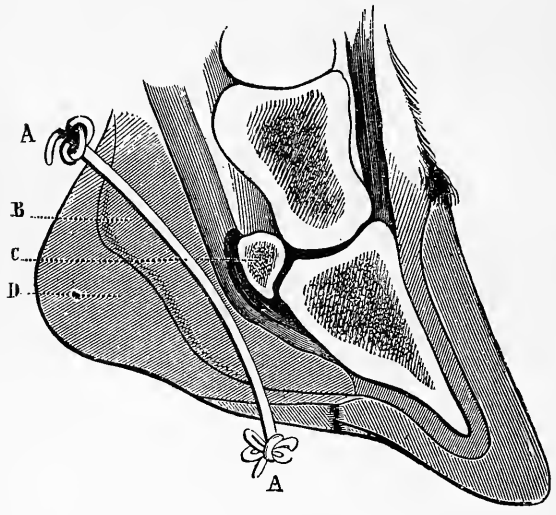


FIG. 699.—As the seton should be inserted into the foot.

A, A. The seton; *B.* The sensitive frog; *C.* Navicular bone; *D.* Insensitive frog.

I will refer to one case in point: At a little town in the western part of New York, near Jamestown, a farmer who had attended my class, wished me to look at a young horse that had been lame for some time. I took the horse to the blacksmith shop and ordered the shoe removed, the toe hammered down and

rounded a little, the heels raised, and the shoe again put on. Years afterward, upon my return to that place, I heard the owner state publicly the facts concerning this horse. He said that it had been lame for over a month; that he was unable to find out the cause of the trouble, and did not know what to do for it; that I examined the horse and took it to the shop; that he did not know what I did with the case; he only knew that it never took a lame step afterward. He as much as inferred that the cure was made by some secret manipulation of my own which I did not divulge. The horse happened to be kept idle for about a week after the change in the shoeing, which gave the irritation time to pass off, so that when the horse was put to work and found not lame, it was regarded as a remarkable cure.

At the Sanitarium, in Battle Creek, Mich., while engaged in writing and revising this work, I was requested to look at a very fine horse owned by the institution. It had been lame for three or four weeks, and upon examination I concluded it was a simple case of navicular-joint lameness. I ordered the shoe to be taken off and changed as before directed, and again put on. There being some slight inflammation in the foot, I directed that several thicknesses of blanket be wound around it, and kept wet for a week, at the expiration of which time the horse seemed to be all right; but I told the manager that, to make a permanent cure, the horse must not be put to work yet for three or four weeks, and then to drive only on a walk upon a smooth road. My instructions were followed, the horse put to work in due time, and the cure proved to be permanent.

Soon after my visit to Cleveland, Ohio (referred to in Personal Experience), "Gifford," one of my trained horses, sprained one of his feet so badly that he could scarcely walk upon it. I simply rounded the toe, raised the heels, and kept the foot wet for a week, when the soreness and inflammation entirely disappeared. Being compelled to move him, I drove him carefully on a walk for several weeks, after which the shoe was gradually lowered again at the heel. A year after this, he sprained the opposite foot in the same manner, showing great pain and lameness. It was treated in the same manner as the other, and with the same success. I could refer to a great many cases showing the good results of this simple treatment, which could be done by any one by the directions here given.

When the lameness has continued so long as to render cure impossible, it may be greatly helped by slightly rounding or turning up the toe so that the foot will roll a little on the ground, and slightly raising the heel-calks. The shoe should be fitted very carefully. A still better way in very sensitive cases, is to put leather or rubber between the shoe and foot. When this is done, the nails should not be driven or clinched tightly. Hard wrenching or hammering of the foot should never be permitted, as a very little carelessness in this way would be liable to cause considerable soreness and lameness.

Since writing this chapter, I have incidentally obtained some points in the management of this lameness, which, notwithstanding the extreme length of this article, I will take the liberty to add.

While in conversation with a well-known veterinary surgeon in New York City, he incidentally informed me of a case of navicular-joint lameness, which was diagnosed as such, and pronounced incurable by one of the leading veterinary authorities in that city. The animal was a fine mare, owned by Dr. Sayers, an eminent specialist, and valued highly as a gift. Discouraged at this decision from a high authority, he went immediately to Mr. Robert Bonner, whose general knowledge on everything pertaining to the horse he regarded as next to infallible, and in whom, as a personal friend, he had great confidence. Mr. Bonner assured him that the case could be easily cured, and directed him to take her to Mr. David Roburg for treatment, requesting him, as a matter of curiosity and as a proof of the success of the treatment, to give a daily report of the progress of the case. The result of the trial was the complete disappearance of the lameness in about two weeks, although the horse was driven daily.

I called upon Mr. Roburg, who, as stated on page 630, is an expert shoer of remarkable skill, and stated to him what I had learned, and that I would like to have him give me such an explanation of his method of treatment as he could constistently do; that I wished to give the best points known on the subject, not only for the benefit of my readers generally, but for that of the veterinary profession. Mr. Roburg very kindly explained to me the main points of his management. First: To remove all strain from the part involved by the most perfect adjustment of a shoe that would aid mobility to the greatest extent;

and when in the stable, keeping the foot cool by slightly packing the sole with wet oakum, and covering the coronet with wet cloths. If there was any contraction, he made it a particular point to relieve it and the compression of the wall at the same time, as quickly as he could, by the adjustment of his spring, which is explained and illustrated in connection with his shoes on the pages referred to. His best shoe, he claimed, for this purpose, is the one here shown, of which I give very accurate sectional drawings, with those of others made on the same principle, on pages 691, 692. In fitting the shoe to the condition of lameness, he is very particular to adjust it so as to ease the strain or cause of irritation to the greatest possible degree, frequently being compelled to experiment, more or less, by moving the shoe a little to the right or left, then noticing the effect upon the horse in traveling. When there is improvement, it is accepted as proof of the correctness of his adjustment; if, on the other hand, there is not what he regards as satisfactory progress, he changes the shoe according to the indications of the case until successful. The real point of this shoe is that, by its rounded form, it supplies the lack of mobility caused by the inflammation and soreness in the foot; that it acts, as it were, as "an extra joint to the foot," which is the necessary requisite; so that for all forms of acute or chronic lameness he tries to aid the freedom of the foot in motion by the conformation of the shoe and its adjustment.

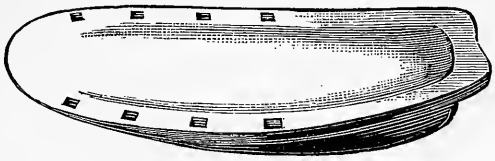


FIG 700.—Side view of second form of Roburg's shoe.

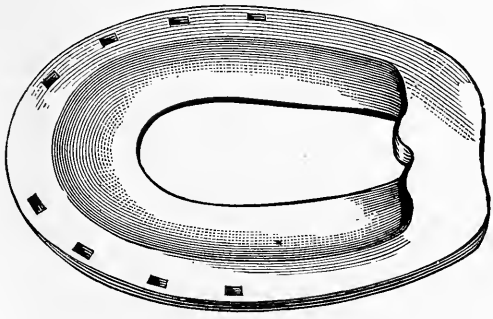


FIG. 701.—Roburg's shoe.

Mr. Roburg has had such remarkable success in the management of such cases by his treatment, the one referred to being

but an ordinary one in his practice, that it certainly seems worth while to study the matter with care, since it is evident there is much to learn on the management of this and other kinds of foot-lameness, and that Mr. Bonner is so thoroughly informed on this subject as to be far in advance of all accepted authority. Indeed, Dr. Going, formerly veterinary editor of the *Spirit of the Times*, who is himself one of the most successful practitioners and reliable authorities in the country, in an article published in the *Turf, Field, and Farm*, admits as much, as will be seen by his statement, which I copy, with the editor's comments on the same:—

"Dr. Going, who was for many years editor of the Veterinary Department of our Chambers street contemporary, writes as follows on the subject of Horse-Shoeing, in his 'Veterinary Dictionary':—

"'It is said no man has ever yet reached perfection in any branch of art, science, literature, industry, etc.; but while I am unprepared to join issue with the assertion, I can safely say that the nearest approach which has ever been made in this connection (horse-shoeing and the study of the horse's foot) has been made by Robert Bonner, Esq., of New York, who, had not the *Ledger* already made him famous, would undoubtedly have obtained widespread renown through his almost superhuman knowledge in this department. I have had the pleasure of conversing with him on this subject, and am pleased to have an opportunity of stating the impression the conversation made upon me.

* * * "'I would say, if Mr. Bonner could only be persuaded to write a book on this subject (which he so intimately understands), it would be an inestimable boon to the present and future generations of man and horse.'

"This is a generous tribute on the part of Dr. Going to an amateur. If other veterinary surgeons were equally generous, then there would be a chance for them to learn something. At present, we know that they know comparatively nothing, for instance, about navicular-joint disease and other alleged incurable troubles of the foot. A lesson in this line would not hurt the editor of our own Veterinary Department.

"We, too, think that Mr. Bonner ought to write a book on this subject."

All are aware how much depends upon the judgment and ingenuity of the operator; that a very little want of judgment or skill in making the adjustment would cause failure; that this harmonizing of conditions to those of the case must be largely the province of genius, aided by the most careful study, to accomplish, and this Mr. Roburg proves himself in the highest degree an expert in doing.

Neurotomy.*

Should the case prove to be incurable, there is now one alternative for relieving the lameness. That is severing the nerves, or performing the operation of neurotomy. If the foot will bear it, the character of which I will presently describe, it will prove a very important and valuable operation, because it can be resorted to with success after all other means have failed to remove the lameness; not only this, but it relieves the animal from the continued pain and suffering to which he has been subject. But if, on the contrary, the case is not a suitable one, no matter how skillfully the operation may be performed, it will prove unfavorable or destructive to the case.

It was first introduced by Dr. Turner (before referred to), who, after vainly exhausting his resources of treatment for the cure of navicular lameness, finally turned his attention to destroying sensibility of the foot by severing the nerve, and obtained the most satisfactory results.

The operation was afterward introduced in the Veterinary School of England, as a means of overcoming chronic lameness.

Great care should be taken in selecting proper subjects, as in no case where inflammation exists in the foot, should the operation be performed. It is adapted only to cases of chronic navicular disease, ossification of the lateral cartilages and ring-bone, and from feelings of humanity in aggravated cases of canker, which are tedious and painful in the extreme. The following are the rules laid down by the best authorities: First, Never operate upon a very heavy, thick-legged cart-horse; Second, Never operate where the feet are thin, weak in the heels, full or convex in the sole, or brittle through weakness of the hoof, and on no account if the horse has high action; Third, Operate only when the foot is good and strong, with a concave sole, and the action not too high; for if the action is high he is apt to injure his feet by the severe pounding. The greatest care is required not to prick, and in driving not to bruise, the sole. The feet should be picked and washed every night, and well covered with hoof oint-

* This article was written by the author, mainly from notes taken of Dr. Summerville's lecture to him on neurotomy.

ment to keep them from becoming dry and hard. There are two locations for this operation, the high and the low. By dividing the nerve above the fetlock, called the high operation, we destroy all sensibility below the fetlock. The lower operation may be performed at a point about at the middle of the large pastern bone and upon the posterior part of the nerve; it then acts as a cure for ossified cartilages, and the forward part of the foot is left to be supplied as before by the other branch of the nerve.

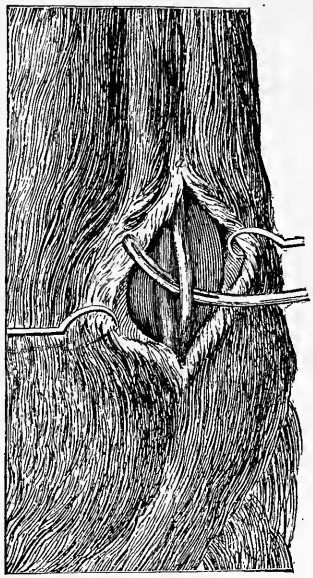


FIG. 702.—Usual method of performing the operation.

Before performing this operation, the horse should have a few days' rest, and proper means should also be used to allay any inflammation of the affected parts. The horse should then be cast, the foot secured, and an incision made through the skin about aninch long, and about an inch and a half from the fetlock, using a sponge to absorb the blood. The subtissues are now scraped aside with a blunt knife until the nerve is exposed, which lies by the side of the artery. Next, a threaded needle, slightly crooked and blunted at the point, is passed under the nerve. When once the thread is passed under, the main difficulty is over. The needle is now taken out, the nerve gently lifted with the thread, and the cellular membrane underneath snipped away with a pair of scissors or knife, so as to admit a slender, curved bistoury to pass under the nerve without touching it. As soon as the nerve is cleared up to the highest part of the incision, the bistoury is passed along to this point, and the nerve quickly divided by a drawing stroke. It is necessary that the nerve be divided with as little violence as possible, for when it is done with the scissors, or by lifting the knife directly up, or with a knife that does not cut well, a thickening will form at the upper extremity of the

divided nerve, which will show considerable tenderness; and when this happens to be struck in driving, it gives the horse so much pain as to cause him to go lame for a short time.

The division of the nerve causes intense but momentary pain, like an electric shock, and the horse's struggling at the moment must be attended to; but as soon as this passes off the pain of the operation is over. The inferior portion of the nerve is then to be laid hold of by the forceps, and from half to three-quarters of an inch cut out. The edges of the skin should next be drawn together with one stitch in the middle, and the operation performed on the opposite side in the same manner. Next, apply a cold, wet bandage; give a dose of physic. About the fourth or fifth day the stitches may slough out, leaving the wound open; but this need not cause any anxiety. Keep the horse quiet about two weeks, when he may be turned to pasture or put to slow work.

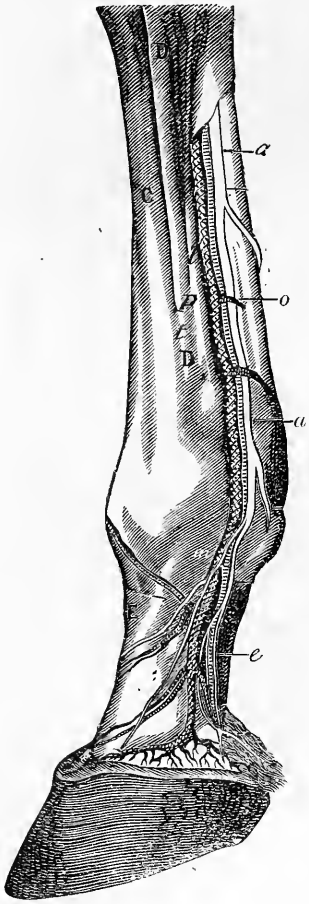


Fig. 703.—Showing nerve, artery, and vein.
a, *a*. Nerve; *e*. Vein; *o*. Artery.

It has been found that simply severing the nerve will remove the lameness for a few weeks, when it will again unite and leave the foot as sensitive as it was before; and that by removing a small portion of it, three-eighths of an inch or so, it will unite in the course of a few months; but the cure in most cases is made permanent. When it is desired to destroy this sensibility, or so that the nerve cannot grow sufficiently to again unite, from three-quarters of an inch to an inch is removed. Of course care should be taken not to work the horse violently immediately after the

operation, or have the feet injured by shoeing, or exposed in any way to injury, such as taking nails and so on.

This has been an operation that for many years has been made the most of by jockeys and unprincipled persons, by cheating in two ways: First, by operating upon a horse so as to remove the lameness, and then trade or sell quickly as a sound animal, and if not suspected, there would be no way of detecting it until too late. Hence there should be a law passed that all horses having this operation performed upon them, should be branded so as to be known. If there is any suspicion of such a thing, it can be easily proved by sticking a pin into the coronet, when, of course if the nerves had been severed, there would be no sensibility.

The second would be done somewhat as follows: Parties would travel rapidly through the country, assuming that for a sum of money they would perform an operation that would cure any case of lameness in the feet. By their promising to give perfect satisfaction or no pay, unsuspecting owners would be induced to bring in their horses for treatment. No matter though the horse may have been driven twenty miles that morning, with his feet full of heat and inflammation, and unsuitable for the operation, the horse would be thrown down, the nerves severed, when he would be trotted up and down the street to show the apparently wonderful effect. The owner, of course, would be delighted, and pay the fee, when he would be told he could drive the horse home. The result would be that from the amount of inflammation produced in the foot, there would be ulceration of the coronet and loss of the hoof, making the destruction of the horse inevitable. This led to the operation being brought into great disrepute and suspicion.

It is, of course, advisable in all cases to have a competent veterinary surgeon employed, if available, to perform this operation.

Description of Some of the Pathological Conditions of Horses' Feet, Commonly Present in the Various Stages of Chronic Lameness.*

The morbid specimens selected for the drawings which illustrate this section of my work, comprise some of the most important conditions commonly met with in lame horses, the occurrence of which it is my object to prevent and remedy.

The chronic anomalous conditions of horses' feet, entailing lameness of more or less acute degree, present two quite opposite appearances to our view; the one a *wasting* and the other an *engrossment* of structures, the textures of the parts affected being

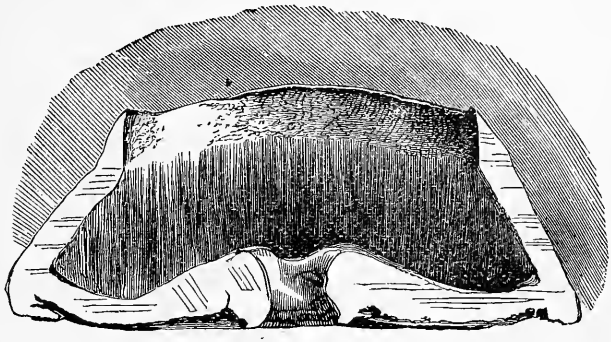


Fig. 704.

in both instances greatly changed. In describing these conditions, I shall make use of the appropriate short terms,—Atrophy and Hypertrophy.

Fig. 704 represents a transverse section of the hoof of a fore foot of an aged cart-horse, in which the sole had become flattened, and at some points had even passed the plane, and assumed the convex, in contrast to the normal *concave* form of surface.

Fig. 705 represents the coffin-bone of the same foot, as that of the hoof described, and shows how exactly the outline and surfaces of one accord with those of the other, which characteristics are made more manifest when the parts are handled. It is true that these surfaces are not met with quite regular, but the irregu-

* To illustrate some of the changes of structure that take place in the foot, as the result of inflammation, etc., I copy the following article from Gamgee on Lameness.

larities are constantly reciprocal. It has been said, and I believe truly, that "nature abhors plane surfaces" in animal formation, and such is found to be true as normal and altered forms are studied.

The above-described aspect shows the atrophy of the bone, but this coffin-bone affords a typical example of *hypertrophy* also, and I can submit no better specimen, though I have many others analogous to it, to show the twofold condition of wasting and enlargement existing together in the same bone at different parts. Atrophy, wasting of bone, precedes hypertrophy, augmentation of bone; and yet both are effects due to prior adverse causes, without which neither of these conditions would have happened.

Figs. 706 and 707 represent the hoof and last three bones of the near fore foot of a horse, which, in a state of great lameness, was taken to an Edinburgh tan-yard to be destroyed. I obtained and dissected both fore limbs, which were deformed precisely alike,

FIG. 705.

and were affected by altered conditions of structure, as these specimens prove.

Fig. 706 shows the conditions of the hoof, which displays obvious traces of mutilation on the exterior surface of the wall, by means of the rasp, and of the indiscreetly-applied drawing-knife. By this twofold action of paring the hoof below, and rasping it exteriorly, a result was attained which has been admirably characterized in the technical phraseology of model Italian farriers—"The horse's foot so treated is peeled like an orange."

Fig. 707 represents the skeleton of the foot to which the above-described hoof belonged. Similarly placed upon a plane, the hoof and coffin-bone exhibit corresponding anomalous conditions, the most obvious being their tilting inward, due to the reductions of the hoof, chiefly in its inner part. The tilting was caused by reduction of the hoof, and by absorption of the coffin-bone,—nature's common accommodating provision for the mitigation of pain by the removal of margins, when these, being deprived of support and defense, become exposed to injury.

Here, again, that provision is seen, as in the former instance of

compensation, by new bone-structure being formed at different points.

Succeeding to the atrophy of the coffin-bone, its appended cartillages become ossified, and two bone-columns rise up laterally, one on each side of the short pastern bone, which is seen leaning against the inner one, and is held by ligamentous bands extended from the outer column.

Figs. 708 and 709 also represent a hoof and the skeleton of the near fore foot of a horse. This case is of great interest, and I ad-

Fig. 706.

duce it for the purpose of explaining something in a positive and also a negative way about *corns*.

In the estimation of all concerned, corns were the great cause of suffering to this horse. Besides the usual paring of the sole, Fig. 708 shows two openings due to the scooping away of the hoof where "*the seat of corn*" was said to exist. The more the scooping away of the hoof was persisted in, the greater was the suffering caused by the destruction of the quick. The openings through which the blood-colored discharge descended are shown in Fig. 708 by two bands of paper passing through each angle of the hoof, at its extremities, by the sides of the frog.

Fig. 709 represents prominently a lateral view of the inside aspect of the coffin-bone. A deep ulcerated cavity is shown at the

side of the extremity of the bone, and one similar in kind, but less extensive, exists on the retrorsal margin on the other side. Apart from the lesions of hoof, soft structures, cartilage, and bone, atrophy of the coffin and navicular bones, with deep excavation of the latter, existed to the same extent in both fore feet.

The termination of this case was extraordinary in its occurrence, and more than justifies, it seems, a short digression from my subject; the termination was by sudden death. The incident which I am about to narrate happened nine years ago. While in the performance of my duty at the Edinburgh New Veterinary College, I was called in haste by a groom to attend a horse that had accidentally fallen in a street close by. I accompanied the man in-

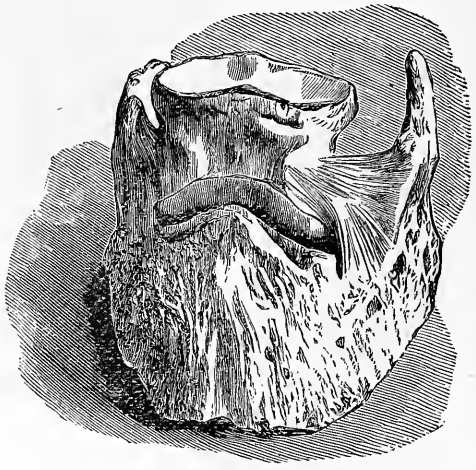


FIG. 707.

stantly, and when we reached the stable found the horse lying quite dead; only a few minutes had elapsed from the time the groom left the horse standing in his stall, and only about twenty minutes from the time the horse fell. The immediate occurrence, as related by the man, happened thus: The horse, lame on both fore feet, was being ridden by the groom, who was returning to the stable with a sackful of forage placed before him on the horse's back. The animal, so encumbered, was being trotted on the pavement of a narrow street, and the way he was going was on a decline. The horse stumbled, and after making efforts to recover himself, fell, pitching the man and sack over his head. The man escaped injury, but the horse was with difficulty, and only by help, raised upon his feet, and staggered into the stable, which was only a few yards distant.

An examination of the carcass revealed the cause of the almost instant death that succeeded the fall of the horse. The midriff was rent in its center, making an aperture so large that the stomach

and other contents of the abdomen had shot through, in the forward fall, and these filled up the chest and were immovable. Ruptures of the diaphragm of the horse have come under my notice on several occasions, from well-understood causes of spasmodic kind, but the above is the only case I ever knew of a similar occurrence.

The rest of the history of the subject was soon made out. The horse was the property of a grocer, who used to run him in a light cart, and who stated that he had owned the animal for about two years, and that he had been a reputed good hunter, and came to the last owner at a low price through being lame, in which state the animal had continued, and had worked till the termination now detailed; thereafter I obtained both fore limbs of the horse for dissection, with the results shown above.

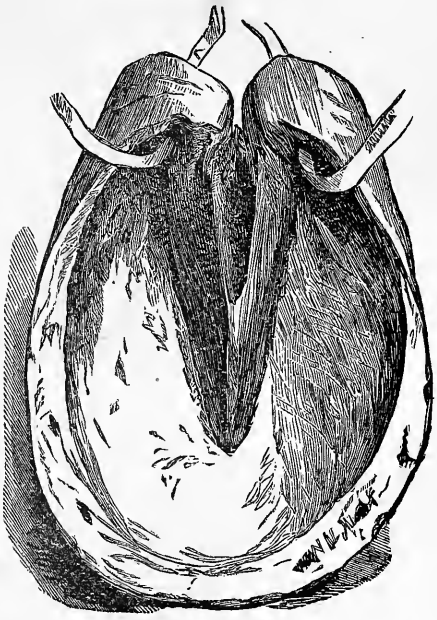


Fig. 708.

Figs. 710 and 711 represent component structures of the foot of a horse whose case was intimately and long known to me.

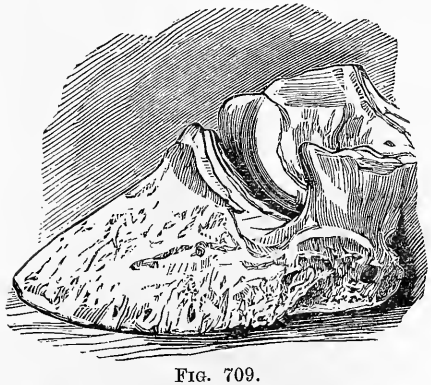


Fig. 709.

Fig. 710 shows the hoof placed on a plane surface; it is seen to be depressed across the front of the wall, and a light-colored streak, marking an inveterate sand-crack, extends from top to bottom at the quarter. Corresponding to the hollow depression of the foot above referred to, there was necessarily a bulging of the sole downward, that is, a flattening, and more or less convexity at parts of the sole. Altogether a total abnormal state is observable. The horn fibres are seen in the illustration of the

hoof to have attained an undue obliquity, and curve in their course from above downward.

The engraving of the coffin-bone of the foot, of which the above-

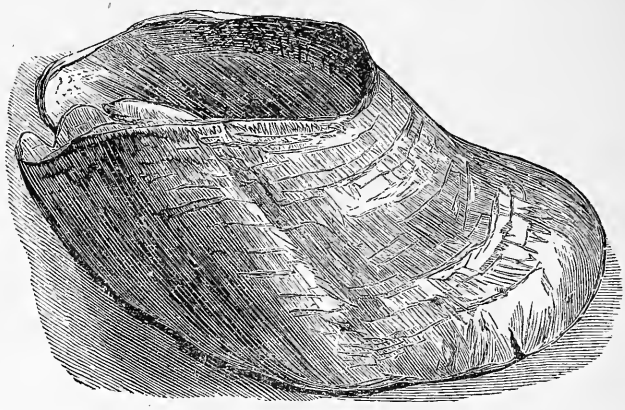


Fig. 710.

described hoof forms part, is remarkable under the twofold aspect of deformity and diminution of substance. The space occupied by the bone within the hoof, and its weight, are reduced probably two-thirds the proportion of its primitive complete growth, while the hoof, viewed superficially, greatly exceeds the normal size. I have mentioned the superficial aspect of the form, that is, the deceptive view, the one common to aged horses with defective and diseased feet. Surface and substance do not amount to the same thing; weakness and disease are common to the first, but strength and perfection are only compatible with depth of cubical capacity, with proportionate substance, and form of structure.

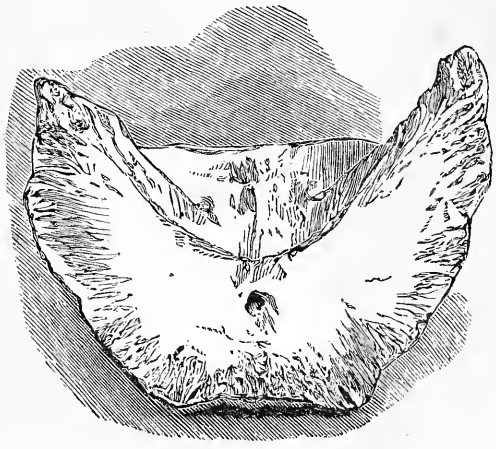


Fig. 711.

The animal which supplied material for the above illustrations was sent to the New Veterinary College, when very lame, in 1859. With difficulty the horse had been led from his stable. Bar-shoes, with leather soles, hid from view surfaces of soles and frogs painful even to look on when exposed.

The coachman expressed surprise, and exhibited displeasure, when he saw me taking up the horse's foot, ordering the shoe to be

Fig. 712.

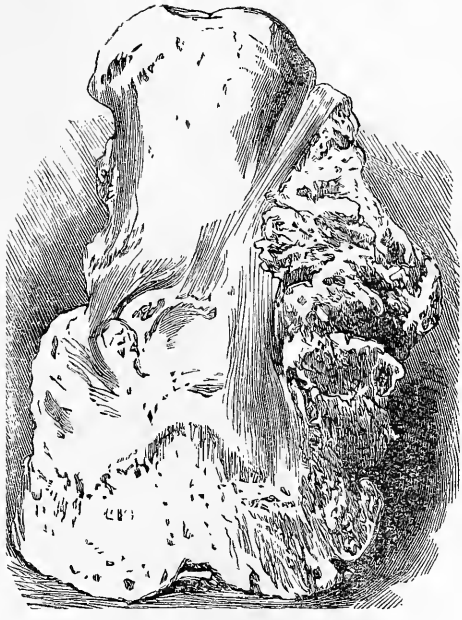


Fig. 713.

taken off, and a new pair of shoes to be made, while I proceeded to prepare the feet. It subsequently transpired that putting the horse out of his misery was contemplated, and that our opinion was expected to be in accordance with advice tendered to that effect. We took pains, and employed the knowledge and skill at command, with the result that the horse which arrived in pain and difficulty walked from the forge two hours afterward, almost free from pain, and was put to work either on the next or second day, and went on rendering excellent service for three years afterwards, when, being then nineteen years old, and a casualty having happened to him, he was put away.

Fig. 711 represents a coffin-bone, selected for the purpose of showing one in a more advanced stage of disease than any of those yet brought under notice.

The differences in the degree of absorption of this bone which had taken place, and its consequent shortened form, will, it is presumed, make impression on the minds of readers. I have to state, moreover, that such phenomena are not very uncommon, but often lie hidden from observation within a hoof excessively prolonged and turned up in front, with depressed sole. By looking at the bottom surface of this bone, it may be seen that at the center, which normally is the point of the deepest concavity of the arch, columns

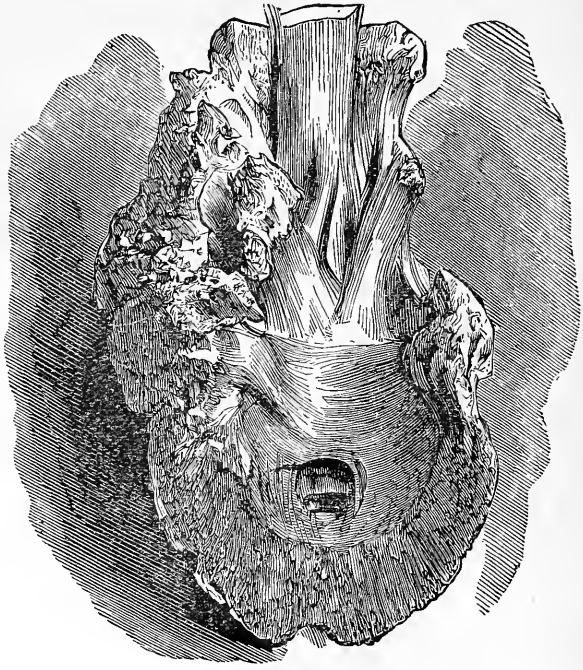


Fig. 714.

of bone are formed which give attachment to the fibrous bands, tendons, etc., the natural bony crest and arch being destroyed.

The three succeeding engravings represent distinct views of the same foot, one of the two fore feet of a cart-horse, both of which were in precisely the same abnormal state; the history of the subject is known only to the extent that the limbs were obtained by the author at a tan-yard in Edinburgh, where the horse had been taken to be slaughtered.

Figs. 713 and 714 show respectively a front and back view of the same parts—the bones of the near foot—in a complete state of anchylosis. I shall only attempt to give a brief description of these anomalous specimens; to treat fully the causes, the conditions, and the order of sequence of occurrences, would require more space than can be assigned here to a single specimen or a series.

The hoof is drawn as if one were looking down into its cavity, showing the bulged form corresponding to the large bone formation on the outer aspect of the foot, occupying the space from the pastern joint downward, and rigidly fixing the joints involved.

In this case, so faithfully illustrated by the figures produced, phenomena are exhibited that are rarely seen so well. In the back view, Fig. 714 of the specimen, is seen the wasted and irregularly flattened state of the coffin-bone, the extent to which cartilages and ligaments have become replaced by bone, and also how some of the ligamentous bands are developed, and their courses modified by attachment to strong spars of bone-substance, displayed to afford hold for these essential bands, without which no movement would be possible, strength would be wanting, and the bones would be crushed by muscular force exerted from above. I find the same order of sequence in this case as I have described in others; firstly external anomalous conditions, alterations of the surfaces of the coffin-bone, and these succeeded by other compensating provisions. The case is typically illustrative of the two conditions to which I have referred as common to these anomalous changes, —destructive and reparative; the first of these in this case is obscured by the excess of the latter. I venture to submit that the lesser in appearance was the real diseased state, set up by artificial measures badly applied, and that the additions represent Nature's provisions of palliation, following as the necessary sequels.

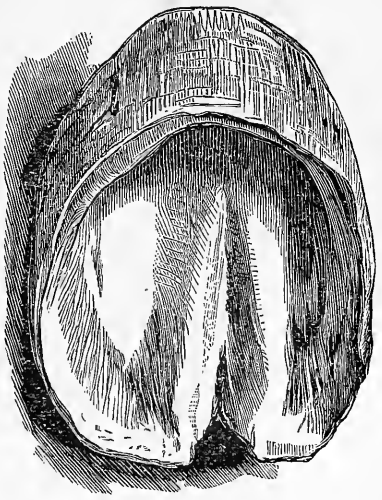


Fig. 715.

Fig. 716.

Fig. 716 represents the last six bones of a near fore foot, and is another typical illustration of the waste and increase of substance, mostly of bone. These phenomena, so marvelous in their character, are more common to horses under adverse influences than to any other race of animals. But this figure, and the succeeding one, shows still further nature's provision; the elongations of bone, transformation of cartilages and ligaments into bone, and the substance of one uniting with that of the other, to give strength, are brought about by the dragging of the periosteum. That which

Fig. 717.

modern surgery has accomplished by transposing the membrane of bone from one position over another, is done in the case of the horse by the dragging leverage of shaft bones upon pliable intermediate structures, having their fixed points upon the surface of bones below, which constitutes their base of action, and that failing, a new order of reparative construction ensues.

Atrophy, in most instances, escapes notice, or from lack of knowledge is alluded to under the vague phrase of "Contraction of the foot." Then occur swellings, which are tortured with assumed remedies; that is beginning at the wrong end, and in the wrong manner to effect a cure or afford relief. The Fig. 716 was taken from one of the two fore feet, both of which were

affected with *corns*. The hoofs were reduced so as to be incapable of performing their office; and while the drawing-knife was doing its scooping work, nature's fence of bone was closing the breach. Leather soles and bar-shoes hid the bottom of the mangled feet.

Fig. 717.—The pathological conditions represented by this engraving, which includes the bones of the foot corresponding to the last referred to, excepting the navicular bone, offer much in common with the last for contemplative instruction. All that has been said about the urgent causes which induced such extensive substitutions of bone for ligaments and cartilages, the augmentations and complete anchylosis of joints, applies to this case. The history of

Fig. 718.

both subjects is alike unknown; the specimens were obtained at the place of slaughter, to which the lame horses were taken at Edinburgh, and the dissections and observations were carefully carried on by me, and much time was devoted to the work. The cause and origin of the disease in this instance differed from those of the former, and so, in the sequence and termination, obvious differences in external appearances and conditions were observable.

The original and essential seat of disease in the case represented by Fig. 717 was caries of the pyramidal process of the coffin-bone, which the drawing admirably shows; the foot represented is the near one, and an enlargement and deep excavation of the bone is seen in the lateral aspect of that projection. The disease had been of very long standing, as all the changes the foot had undergone

testify. The front of the lower surface of the coffin-bone, upon which alone the limb rested, had become absorbed, the object being to constitute a straight column, since the parts were incapable of performing any of the motive functions of the healthy foot, for leverage effect. The hoof necessarily took the vertical line of form with the whole region—the heels were deep. All bearing was conveyed to the point at which part the shoe was worn, proving that the animal had been worked to the last in the state in which the foot was found after death, there being no signs of recent change in the case, nor any means of relief having been resorted to.

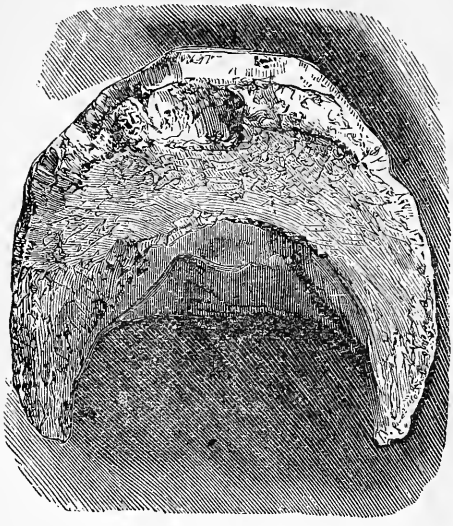


Fig. 719.

This figure, No. 718, in some of its phases, is a repetition of the last (not included because not of sufficient interest to be desirable), for the deplorable barbarity practiced, of which it affords the most conclusive evidence.

The specimens from which the drawing was taken, the hoof and navicular bone, are those of the fore foot of a fine mare, apparently thorough-bred, which I was in the habit of seeing with mingled feelings of pity, and admiration of her form, as she worked a cab in Edinburgh seven years ago. The navicular bone, as is plainly shown, was extensively wasted and ulcerated. The mare, long before her death, which, like that of the previous case, was caused by the torture she endured, had been the victim of inveterate chronic lameness, which could have been readily relieved, but progressively advanced from bad to worse. Reduction of the hoof by cutting induced absorption of the lower surface of the coffin-bone, and also that of the navicular bone; until, as in the previous case, the knife repeatedly employed destroyed the hoof first, then the cartilage, and, lastly, reached to the navicular bone and the joint, the latter injury proving fatal to life.

Fig. 720.

Fig. 719 shows the state of the lower surface of the coffin-bone;

the convex form of the plantar surface of that bone had, as is always the case, its counterpart in the form of the hoof, the sole of which was *paumace*—after a French expression,—literally, apple-shaped, or round instead of concave and arched. But the typical character of those coffin-bones, as represented by the single specimen, is that of both being fractured in a transverse direction across the bottom of the bone, at an inch from the point.

Fig. 720 shows the foot, drawn as it was placed upon a table, and will help in this description the comprehension of the state of the case. The point of the bone is turned up. The bone, which had become shallow and weak, at length, under the weight and exertion of the animal, gave way at the part indicated, *i. e.*, it fractured, but was held together by the net-work of fibrous texture which laces and invests the bone. The lesion may be regarded as a partial fracture, associated with a bending upward of the loosened end of the bone, held in proximity chiefly by the fibrous tissues, but supported also by the hoof, which, though thinned and weak, took the form of the broken bone, and was bent upward in front. The other foot I prepared, differently from that used for these engravings, by sawing longitudinally through the hoof and the included parts while fresh; these, together, are remarkable specimens.

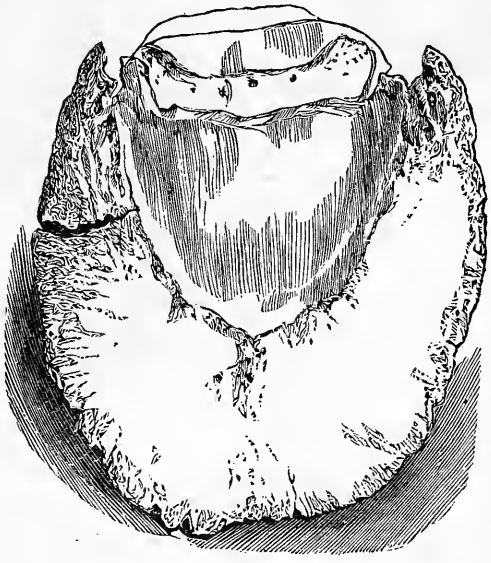


Fig. 721.

Fig. 721 represents another form of fracture of a coffin-bone, but though differing in its appearance, and place of the occurrence of fracture, from the case previously described, the two help to elucidate each other as to the cause and mode of occurrence. As shown by the engraving, this bone was flattened down by absorption until it became so attenuated as to be unequal in substance and strength to bear the burden imposed, and it therefore gave way under it. It will be observed that the bone broke where, from greatest pressure and absorption, it had become weakest, and, as in the former case, it broke where the greatest strain of lever action was brought to bear upon it. To explain, I must state that the coffin-bone is one of the most energetic levers in the whole system of animal-construction, in the line of its long axis from heel to point. The fract-

ure of the bone, represented by Fig. 720, happened near to the point of the lever, while being raised, under weight from behind, upon the point. In the case under consideration the bone had become weakest on its inner half, precisely at the center line of the foot, so depressed by its thinness that the foot tilted inward, and gave way immediately beneath the pivot, the mid-line of the coronary bone; this was also the fulcrum of the lever, the front of the bone being its point of resistance. As in the former case, the raising of the foot from a plane toward a vertical line fractured the corresponding bone in the two cases in different positions, but through the same causes,—weakened hoof, and the other adverse conditions which led to atrophy of the bones.

Fig. 722 is a representation of a fractured navicular bone, a casualty of more frequent occurrence to horses in this country than

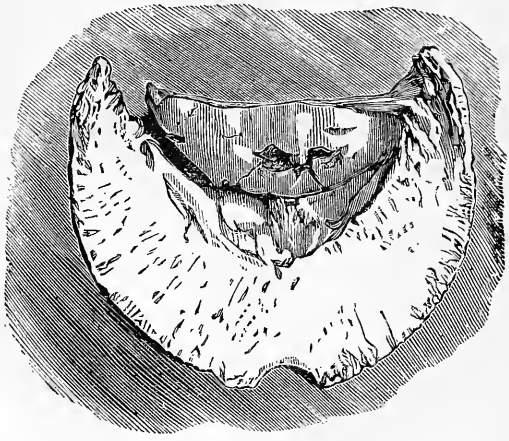


Fig. 722.

is commonly known, but which has scarcely been noticed. Fractures of this kind are effects due entirely to long-protracted adverse conditions of the feet, such as have been already dwelt upon. I have never met with a case of fracture of either coffin or navicular bone where previous long-prevailing diseased action of the foot was not manifest.

In the instance represented above, the reader may see that the bone was extensively ulcerated and excavated like a decayed tooth, and at last the fracture occurred in two lines diverging from the excavated center to the anterior margin of the bone, where it is connected to the coffin-bone. But I must request the reader to go back with me to see the order and sequence of occurrence; the excavation of the navicular bone is a secondary occurrence, an effect due to preceding and continuous deviations from health.

The coffin-bone in Fig. 722 is wasted down to about two-thirds of its natural depth and substance. Its semi-lunar crest is gone; there is no sufficient concavity behind the plantar surface of the

coffin-bones; tendons and other strong bands, requiring strong, bony points for attachment, lack such hold, and the space between the navicular bone and the tendon upon which it glides is diminished; the joint-capsule lacks space, all the functions are deranged, and the navicular bone, if in normal condition, would be too big for the lessened space; it becomes flattened, its substance is diminished, and is so much weakened, that at length it breaks down under less than ordinary exertion.

Fig. 723 represents another case of fractured navicular bone, in which all the complications are still more manifestly extensive

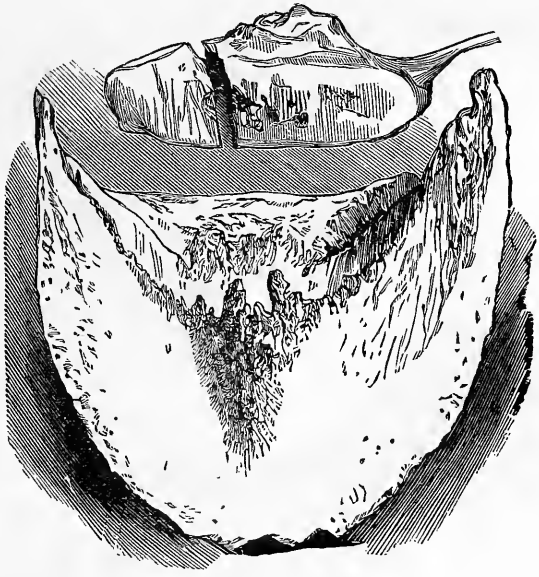


Fig. 723.

than in the last. The foot that supplied this specimen was obtained after the horse was slaughtered, and nothing was learned of the history of the case.

The fractures in both cases had occurred long before the horses were destroyed, and there was ample evidence to my mind that the horses had been made to work almost as long as they lived, judging, as I did, by the appearance of the feet and shoes, and by the pathological conditions revealed by dissection. It may seem to some that there is not much to be learned from seeing these dried bones! still less from engravings from them! All depends upon the kind and extent of research which follows from the promptings of such incidents; and I cannot refrain from stating that all that is presented to the view, though it be as much as could be saved, is insignificant compared to what the explorer sees in the researches and dissection. Much more is removed than can be left, and each layer of structures unfolds its own tale.

All the subjects which supplied the specimens illustrated were selected on account of indications which led me to investigate them.

When I first saw this animal after death, my whole mind was absorbed in the case, and it would have been of no use if I had only detached the foot, strictly so called, for examination. When trying to make out anything natural or unnatural about the foot, I always take a great part of the limb, so as to include the whole carpal region; and if a hind limb, then of the tarsal region. In this instance I divided the radius a little above the knee. I had perceived, in the condition of the leg, a rigidity induced by thickness and hardness of all the flexing apparatus of the foot, especially

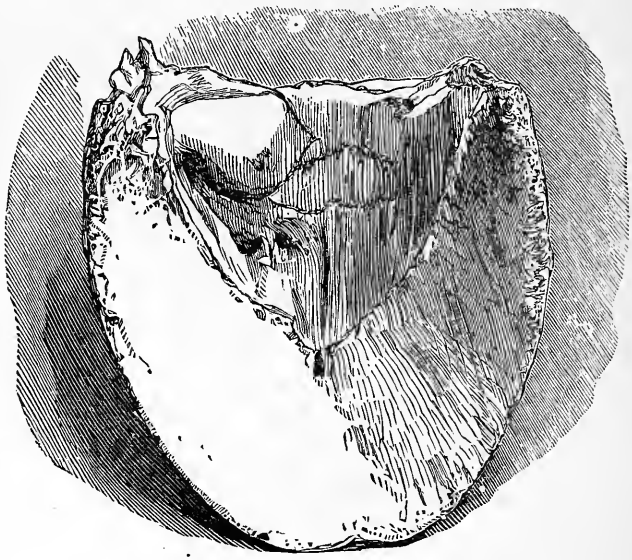


Fig. 724.

from the fetlock-joint to the knee; the back sinews were as thick as the fore-arm of a man, and to the touch felt hard like a cable. I shall refrain from entering into a detailed description of the condition of these parts, my object being now to show plainly how one may be drawn off the scent, and led to mistake an after-effect for the original state of the case—an effect for a cause. I knew that the massive, hard bands were but symptoms of serious conditions below; that it was a coiling of these bands, with the design of shortening their track, by which the range of bones could be held firm, and in a vertical line. With such notions I proceeded to dissect the limb, first by disarticulation at the pastern-joint, and placing the foot in the maceration-tub for six weeks; meanwhile I dissected the parts above, confirming my views of the conditions, and greatly extending my knowledge. In due time, the hoof becoming detached, I dissected the foot, with the result shown in Fig.

723. All practitioners, and horsemen of much experience, will have noticed that when horses begin to get uneasy on their fore-limbs and unsafe in action,—in other words, when permanent lameness is threatening,—a commonly prevalent characteristic anomaly is a tightness of the sinews just behind and below the knee. Attention is usually fixed on that part, and all the rest overlooked. Very early in my career I noticed these conditions, and doubted in my own mind the conclusion that a sprain had happened locally, to account for what was observed.

It was long, however, before I arrived at any exact knowledge in the matter, or succeeded in doing anything beyond following the ordinary injurious and useless practice. But it was a good beginning to get rid of all mischievous interference. I next made out that the state of the limb was in some way caused by that of the feet—by the shoeing; for it never appeared in unshod horses if ever so severely exerted. Having determined that I had a foot-derangement to deal with, I then succeeded in curing cases, my remedy consisting in taking off the shoes, and taking measures for strengthening the hoofs. Nor did I find it necessary to keep the horses at rest, though it is not often practicable to find work that horses can do, and a ground surface congenial to their going barefooted. But when the mind is awakened, and intent on the furtherance of an object, opportunities are made; and so it happened with me. I was in practice at Florence in those years, in a climate favorable for making some such trials as I aimed at prosecuting; I had the advantage of observing customs in other localities. I saw horses trained without shoes able to hold their own with those more systematically brought out on our plan, and perceived that their legs stood sound. So far, I had achieved little more than negative results for all practical purposes, because a plan that prescribes that horses must go barefooted does not accomplish any of the requirements of the art of farriery. The next stage in the inquiry was to determine the relative effects between good and bad shoeing, and in what these respectively consisted. This I was able to do, though it was a work of much cost, labor, and years of time.

Fig. 724 is a representation of the coffin and navicular bones of one of the fore feet of a horse similarly affected in both; with the difference in the one represented that a compound fracture of the navicular-bone had occurred, as is plainly exhibited. Firm reunion of the fragments was completed before the horse was destroyed.

The subject was an aged grey, latterly white, gelding, in his time well known to horsemen of Edinburgh as an exceptionally good horse, a fast-goer in the field and on the road.

In 1861 the pupils of the new Veterinary College bought the poor horse, in a miserable state of lameness, as a subject to dissect. One of the complications, which was a source of inconceivable agony, was a quittor. As it appeared that relief might soon be afforded, and the case made very instructive, the subject was taken up for treatment, with the most satisfactory result. Relief from pain was soon attained; and restoration ensued, and progressed as

rapidly as such complication admits of. It was subsequently ascertained that the horse had been unnerved two or three years previously, had been for years lame, and for some time had worked in a cab. The recovery of the horse having been advanced, so that he was capable, under special care, of rendering some service, the question arose what should be done with him. We had no requirement for such services as might have been rendered on a farm, and it was resolved not to part with him; the only alternative was taken of putting an end to his life; and finally of making the best possible use of the case for future instruction.

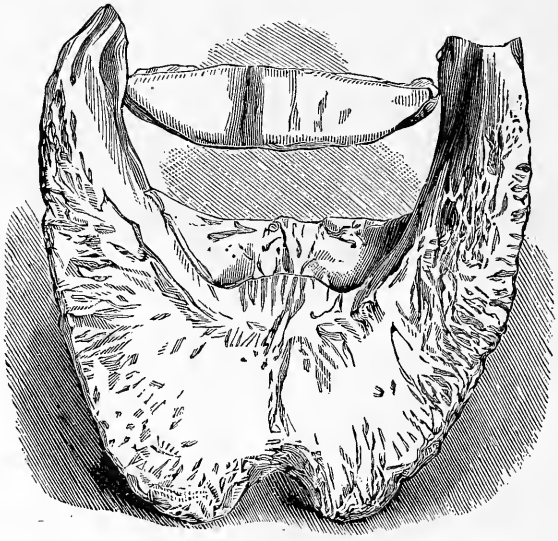


Fig. 725.

Dissection of the feet revealed more than we had made out during the life of the animal; the fractured bone was not predicted, nor was it possible, beyond guessing, that it could have been, amidst the mass of change and destruction of parts; but in the sequel it has been of inestimable value as a pathological specimen, unique, as far as I have seen, in character. I have seen no other instance, nor do collections contain one, of a navicular-bone, as the sequel to inveterate degeneracy, being broken into so many fragments, and then uniting so completely, the foot rendered painless, and the horse becoming, to a possible degree, useful.

Fig. 725 represents another complicated case in which extensive disease and wasting of the coffin-bone was followed by fracture of the navicular-bone. The subject, a grey cart-horse, was taken to the New Veterinary College in 1864, when excessively lame, and left there for treatment. At the time no opinion was pronounced on the case; the horse had been under treatment.

The foot was mangled, and shod with a bar-shoe and intervening leather sole, all combining to augment and perpetuate the painful condition of the animal. The limb of the afflicted foot was kept as much as possible flexed, obviously so at the knee, and the foot reposed upon the front of the hoof—not the natural bearing-surface, but the anterior surface of the wall—tilted over. The knee was swollen to twice its natural size.

After the lapse of a few days, with persistence of pain and all the urgent symptoms unabated, the parties who left the horse were advised that an unfavorable issue of the case was prognosticated. I

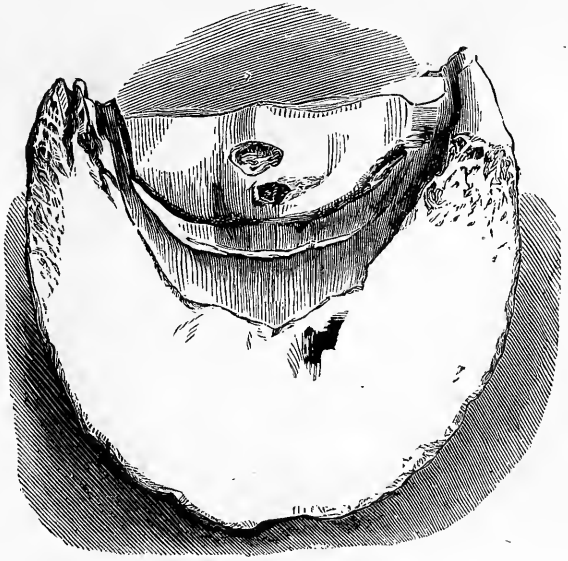


Fig. 726.

had formed the opinion that either the coffin or navicular-bone was fractured, yet nothing could be made out to enable one to determine the fact positively. Difficulty was encountered in discovering the real owner of the horse, and it was not until twenty-nine days had elapsed that consent was obtained to have it destroyed. Time and care being taken for the maceration of the parts, so that dissection could be proceeded with, the ultimate revelations were the state of the two bones represented. The case is remarkable, for the presence of at least one phenomenon I have in no other instance met with, that is, fracture of the navicular-bone without the appearance of any antecedent excavation of its substance by ulceration. There were other more remarkable appearances, but which could not be kept for exhibition, and could only be observed by the eye and touch of the dissector; the fractured bone was held together by its investing ligamentous textures, and I could feel the bone yield

at the broken part, under pressure of the thumb, while the line of fracture was scarcely to be seen. Neither was there any blush of marginal redness to indicate the commencement of reparatory vascular action. But, although that navicular-bone is exceptional among my morbid specimens of the kind, in regard to the absence of obvious excavation, I am not prepared to testify to its being in a normal state; on the contrary, I suspect—for no analysis of the bone, still in my possession, has been performed—that its constitu tion was defective, and that the bone was destitute of natura strength. The wasted, deformed, and weakened state of the coffin-bone is extraordinary, and quite accords with all my experience, gained by these investigations, that such casualties of the navicular

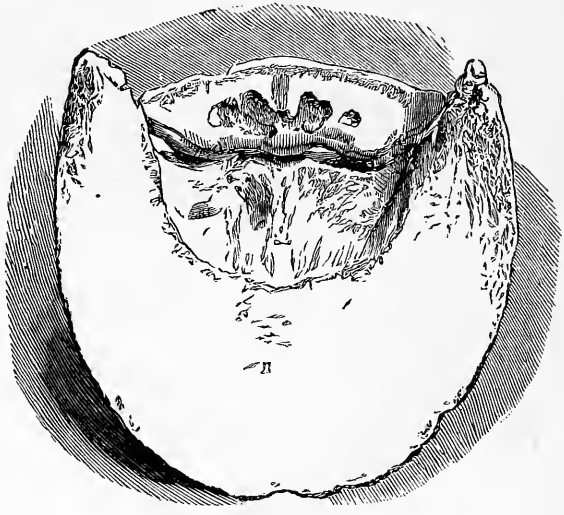


Fig. 727.

bone are secondary, and due to the partial destruction of both substance and functions of the coffin-bone.

Fig. 726 illustrates a typical case of advanced navicular disease, apart from the complications which commonly ensue as additional consequences.

The never absent accompanying phenomenon, atrophy of the coffin-bone, is, however, well marked in this case. In the navicular bone itself, two openings into chambered cavities of the bone are seen about the middle of the hindmost and lower surface, and an oblong excavation is observable on the lower inner margin of the bone.

The above figure represents a case of navicular disease, not essentially different in character from that last described; only that this was a worse case, with more complications and extensive ulceration. I adduce it, not to show the little difference, or to produce a duplicate, but because the case has a history worth relating.

The subject was a grey mare of high courage and breeding, belonging to Mr. James Stewart, cab-proprietor at Edinburgh. The mare had been, for an unascertained length of time, lame of both fore feet, when she was bought for a trifle by Mr. Stewart, who thereupon took her to the New Veterinary College shoeing-forge, to get her shod. This happened in the autumn 1858. I had charge of the shoeing; that is, did the chief part of the work in this as in similar cases—prepared the feet and fitted the shoes. Mr. Stewart, being then a beginner in business, and driving the mare himself, procured abundance of work, so that in the space of seventeen days she wore out a strong set of shoes, and was brought back to the forge to be re-shod, which was done as before. At the expiration of about the same number of days as before, the mare was brought to be shod again for the third time; and this time the intelligent owner was elated at the way his mare was going, and at the manifest improvement that had taken place, notwithstanding the inordinate amount of work the animal was doing, in drawing a four-wheeled carriage over the hilly streets of Edinburgh. I may state that the progressive improvement in the action of the mare went on up to recovery to the extent of complete freedom from lameness. There was no delay in the effect following the cause, or rather, inversely, of effects ceasing when the causes that produced and kept them up were removed. The result was so much the more gratifying to the owner of the mare and all concerned, from the fact that she proved to be one of the best animals of her class in Edinburgh, and continued to work uninterruptedly for three years, thereby helping in no small degree to give the worthy owner a start in business.

I shall not dwell on the termination of the mare's career, beyond stating that during the severe frost in 1862 she encountered an accident by falling on the frozen snow which encumbered the streets of Edinburgh that winter. One of the bones of the knee, the os magnum, was fractured transversely through its narrow axis, and the animal was consequently destroyed.

On dissecting both the fore feet, it was found that their condition was nearly the same; the degree of ulceration of the navicular bone, and diminution, with subsequent incrustation of the coffin-bone, was a little in excess in the specimen from which the illustration was drawn. But most remarkable and instructive of all was the obviously improved state of those ulcerated bones that had taken place. As was seen by the mare's action, her feet revolved, if not fully, at least fairly upon the ground, and that was quite manifest by the appearance of the joints. The cartilage lining the navicular bone, less the breaches on the surface, was smooth and white, and the synovial capsule healthy, and in full secreting function. In fact, the joint was amply lubricated and free.

In anticipation of reasonable inquiries as to how the good result was brought about in this case, I answer, By shoeing. What principle or mode of shoeing?—Rational method, elaborated after long individual experience, founded on observation, and on the ex-

perience of able men of all times and countries; in other words, by means which are only acquired by application of mind and hands for years to the art. I used no differently made shoe for that mare from those I use for other horses of her class doing the same work; viz., shoes with calkins adapted to the pavement and hills of Edinburgh; nor was there anything special in the way I fitted her shoes; they were adapted to the motion and requirement of the feet in the mare's particular case, according to the principles inculcated in this work. No other agencies were used beyond the ordinary measures I recommend for the feet of all horses, to be hereafter noticed.

Fig. 728.

The two following and the last figures of the series are representations of the different structures of the same foot; a section of the hoof, and the coffin and navicular bones of the off fore foot of a horse, whose case I am about to describe by the help of these illustrations.

The subject was a five-year-old Clydesdale stallion, for which a nobleman in the west of Scotland paid £300, and at whose instance, not many months after the purchase, I was called to attend the animal, not, however, until too late for my services to be of any avail. The horse died a few hours before I reached the place where he was, in Ayrshire. With the splendid carcass lying extended before me, I made inquiries into the history of the case, and after receiving the necessary replies for my purpose, and obtaining permission to bring away the feet of the animal, I removed them and returned with them to Edinburgh. The disease from which the horse had suffered was inflammation of the feet, and death ensued through long-continued irritant fever, ending in a blood-contaminated system.

Fig. 728 is that of the inner half of the hoof of the off fore foot; the section, made longitudinally, passes through the middle of the frog, sole, and wall. The bulging down of the sole and its thin state are apparent; the white spot represents an opening through which an excrescence of the inflamed texture protruded.

Fig. 729 represents the coffin and navicular bones, upon the latter of which no further remarks are necessary than to state that that bone was found in perfect health. But to the coffin-bone and

hoof together I must devote myself, with the view to make intelligible what I have to state.

I must premise my description of the case by stating that all four of this horse's feet were alike affected, and almost in the same degree, the ravages sustained by the two fore feet somewhat preponderating. My information obtained on the origin of the disease recompensed the journey to Ayrshire; I learned that one hind foot was first affected; a fissure appeared in the front of the hoof, always a painful affection until the cause is removed, and a cure effected. Lame of one hind foot, and all the hoofs in a weak state, inflammation set up in the other hind and over-burdened one; then reaction, with inflammation of the other hind foot, and first one fore foot and then the other became affected; the result was that

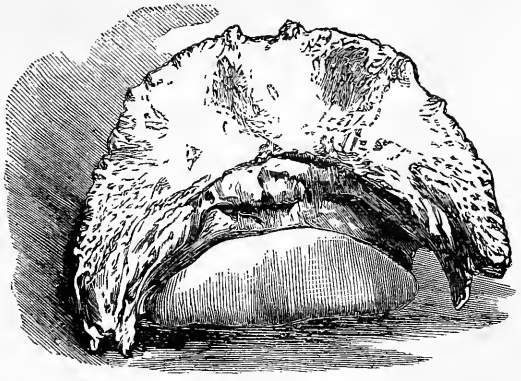


Fig. 729.

the animal was doomed to lie suffering, because he had not a foot that he could stand upon. All this was endured for several weeks before the horse succumbed.*

Reference again to Fig. 729 shows the flattened lower portion of the coffin-bone, and in some measure the extent to which it became reduced; not, as in chronic cases, slowly, but rapidly—all in the space of a few weeks. (The drawing taken of the one must be regarded as representing the state of the coffin-bones and the hoofs of all four feet.)

I devoted several months, at intervals, to the dissection and study of three out of the four feet, the two fore and the hind one first affected; and I never investigated such a case before. The ravages that disease had made were entirely confined to the lower

*In reference to this special case, we should never allow the dissolution of the suspensary power to progress to an incurable extent, but relieve the laminæ of the strain by taking off the weight either by slinging or throwing the horse, cooling the feet, poultice, bleeding, and as soon as the inflammation subsides to blister the coronet thoroughly.—*Prof. Hamill.* (See Laminitis.)

surface of the coffin-bone. I wish particularly to place this fact on record, for reasons that will hereafter appear. Beneath the bottom of the coffin-bones and the thin mutilated soles of the hoofs was deposited a dense layer of lymph, about one-eighth of an inch thick, in which were innumerable particles of bony deposit, imparting a feeling as if sand had been sprinkled over the inner surface of the hoof. Such had been the rapid destruction, partly by absorption and partly by casting off of useless matter.

As to the treatment to which the horse had been subjected, I have little to say. I saw that the current orthodox teaching had been complied with, in the form of cutting away the hoof, and soaking the feet with moisture; every one in attendance had doubtless done his best according to his intelligence, and was to be pitied rather than blamed for want of the right kind of knowledge of the pathological conditions.

The specimens of disease, illustrated and briefly described in this section, offer material for much more lengthy comment. My purpose in publishing these is to prove the fundamental fact that lameness is a consequence of destructive causes, is associated with changes of structure in the foot, and that it is only by a patient and thorough inquiry into these anatomical changes, that what I may be allowed to call the natural history of lameness can be understood, its causes prevented, and the proper remedial measures based on well-defined knowledge applied. This is a line of inquiry which I particularly commend to members of the veterinary profession, many if not the majority of whom have grown up in the habit of looking upon the hoof merely as the investing termination of the limb, and not taking cognizance of the whole digit as a complex organic structure, to understand which, in health and disease, dissection of a large number of specimens is indispensable.

Laminitis, or Founder.

Laminitis, or Founder, may be described as simply congestion or inflammation in the feet. It may be severe or moderate according to the degree of disturbance. If inflammation runs high and is allowed to continue, it is liable to produce so much disorganization as to induce loss of the hoof, which is however rare, or so much change of structure in the feet as to make the horse ultimately so stiff and sore or so much of a cripple as to become practically worthless excepting for slow, easy work.

There are two stages of this disease, acute and chronic. The first produces a high state of excitement and inflammation of the sensitive lamina, and more or less of the internal structure of the foot generally. The second, a morbid or insensitive feeling of the parts generally. The first or acute stage can be invariably

cured, if treated properly, which is not at all difficult to do. The second or chronic stage is not curable ; but may be palliated to a limited extent.

Symptoms.—At first, if the result of exhaustion and chill,

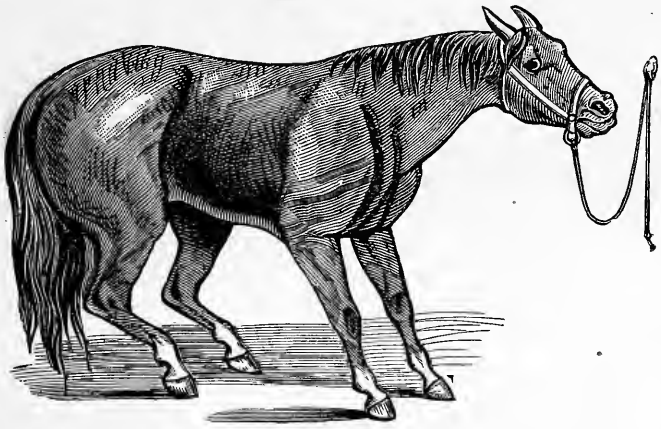


Fig. 730.—Position of horse when suffering severe attack of Laminitis.

there will be the marked effects of great disturbance of the circulation so that there may be a general stiffness and soreness, with

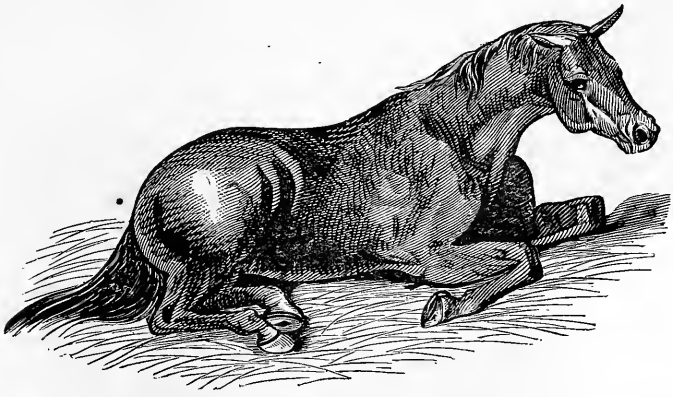


Fig. 731.—As the horse usually lies down when suffering from Laminitis.

high, quick pulse, etc., which will be soon followed by tenderness, congestion, and inflammation in the feet. To relieve the pain in the feet he endeavors to throw his weight upon the hind ones. He advances them in front, resting principally on the heels,

when the hind ones are drawn well under him, something like the position shown in Fig. 730. On backing him. he backs with evident reluctance; when forced back, he drags one foot after the other, evincing considerable pain in doing so. When moved forward, he walks on the heels, his movements being slow and difficult. He will often be found lying down, as removing weight from the feet gives relief; and while down he will usually point with his nose toward the feet. Sometimes the inflammation may be in but one of the fore feet, or sometimes in the hind feet, which is not common; and in some isolated cases may have inflammation in all four feet; but it is usually limited to the two fore feet.

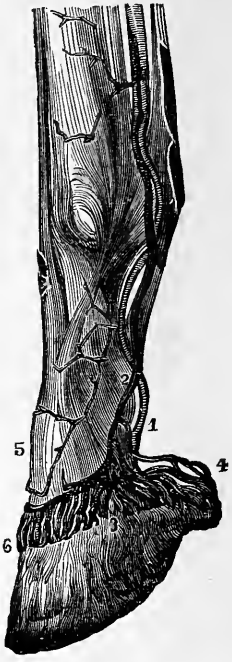


FIG. 732—An ideal illustration of the arteries of the foot injected.

Causes.—Laminitis is very apt to occur from overtasking the feet by pounding them over a hard or rough, frozen road, or leaving the horse standing while heated and exhausted, and especially where a current of cold air strikes him; indirectly by prick or binding with nails, or continued injury from a badly applied shoe, or any cause of continued strain or injury to the feet; driving through a river while warm; washing the feet while warm and neglecting to dry them; frequently also from

FIG. 733.—An ideal drawing of the veins of the foot injected.

overloading the stomach by eating too freely of oats or other grains, as we often see when a horse gets loose during the night and gets to the oat-bin; or drinking too freely of cold water when heated and exhausted. It may also be caused by inflammation passing from other parts of the body to the feet, but not often; but by whatever cause, it is the same, namely, excess of blood in the feet.

The better to convey an idea of the large amount of blood passing through the feet, I include a description of the same by an excellent old author:—

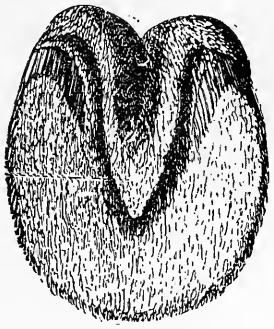


Fig. 734.—Bottom of foot with hoof removed.

"As the quantity of horn necessary for the defense of the foot is considerable, a large quantity of blood is distributed to it for the purpose, and is supplied by two large arteries which pass down on each side of the pastern; these give off considerable branches to the frog, cartilages, and coronary ring. The trunk of the artery enters at the inferior and posterior part of the coffin-bone, and divides into eight branches, which pass out at the circumference or angle of the toe, and give off innumerable branches about the inferior part of the laminated structure, especially about the toe. The distribution of the blood to the frog is remarkable. Here we find several branches of considerable size without giving off other branches, as in the other parts of the foot, until they arrive near the surface, when they divide into innumerable branches, supplying the skin or secreting surface of the frog, and communicating with those of the skin of the sole, or sensitive sole, so that the frog and sole form one continuous surface of skin of great vascularity and sensibility; but greatly inferior in both respects to the laminated substance which is more richly organized, both as to blood-vessels and nerves, than any other part of the body."—*White.*

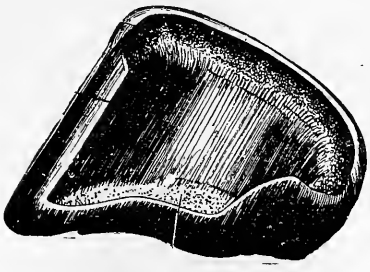
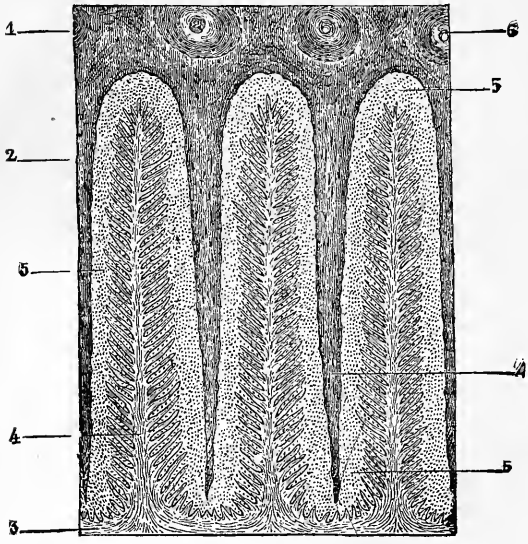


Fig. 735.—Interior view of the hoof.

I include a number of illustrations which give an excellent idea of the large amount of this circulation; also of the hoof and pedal bone, showing that this sensitive structure is covered by an un-

yielding shell of horn which makes the inflammation when very intense, extremely painful, and rapidly destructive in its effect.

Treatment.—It is evident when such a large volume of blood is obstructed, and active inflammation is set up, that there must not only be great local but general disturbance, and that it is of the greatest importance to relieve this as quickly as possible, if results would be prevented, which would destroy the health and mobility of the foot. The inflammation is primarily limited to



1. Transverse section of the hoof.
2. Horny laminæ.
3. Vascular laminæ.
4. 5. Small cells between the podophyllous and keraphyllous tissues.
6. Section of the tubes of the hoof.

As will be seen this beautiful structure is entirely destroyed in front part of foot as shown in Figs. 738 and 742.

FIG. 736.—Section of hoof laminæ largely magnified.

the sensitive lamina and sole, which, if allowed to go on, seriously involves the periosteum and bone, when it is called peditis, which is of a more serious character, referred to hereafter. I will first give the treatment pursued by Dr. Summerville,* with whom I studied, which is practically the standard treatment used by all the old practitioners. I include it mainly because I know of its effectiveness from personal experience. If the case can be treated as soon as the disease begins to develop, bleed from the neck vein from four to ten quarts, according to the size and condition of the horse; that is, if the horse is large and fat, and consequently full of blood, and the attack severe, then the larger quantity mentioned may be taken. Afterward give a purgative

* Dr. William Summerville, No. 127 Erie Street, Buffalo, N. Y.

ball, not enough to physic severely, but to open the bowels freely, which, as explained definitely under the head of "Physicing," for an average sized horse should be from 4 to 7 drachms aloes, 1 dr. ginger, barsoap enough to make a mass, and made into a ball. After the fore shoes have been removed, poultice the feet thoroughly with bran and cold water as follows: Fill two small bags, sufficiently large to hold three or four quarts, with bran, put a foot into each, and tie loosely around the top with a string.

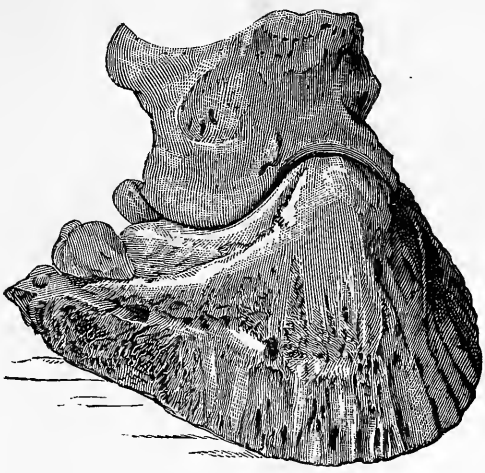


FIG. 737.—Front view of the pedal-bone in a healthy condition. See the great contrast with Fig. 740.

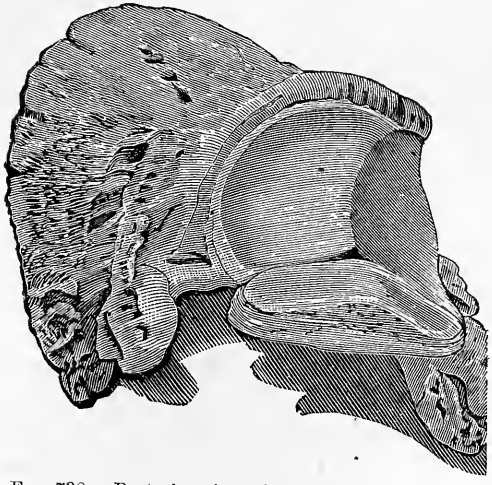


FIG. 738.—Posterior view of a healthy pedal-bone.

Keep wet either by pouring on water, or by putting each poulticed foot into a bucket of water. This manner of poulticing should be kept up for four or five days, when the shoes may be tacked on and the horse exercised a little. Cloths wet with cold water should be tied around the coronet, and the soles stuffed with flaxseed meal, or any other means of keeping the feet wet for a week or two can be used.

The horse should have tepid water to drink, and warm bran mashes during the operation of the medicine. If the disease is

stubborn, as is rarely the case, a second ball may be given after an interval of four or five days. All the cases coming under my observation in the Infirmary during the year in which I was connected with it, and all that have been treated under my supervision since then, invariably yielded to this treatment. If the case has run two or three days without treatment, or not been treated properly, I would advise opening both toes by thinning out their soles, and the feet put into moderately hot water so as to extract a quart or more of blood from each. If this cannot be

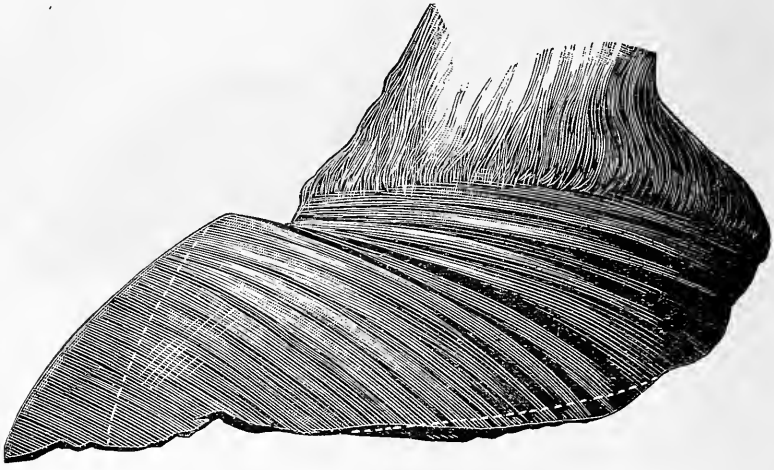


FIG. 739.—Showing the great change of structure produced by severe inflammation.

done, then open the veins freely at the coronet. If treated as directed it is rarely that the attack will not pass off in four or five days.

Dr. Charles Meyer advises the following mode of treatment, which he has used with great success:—

"If the animal is taken within the past twenty-four hours, have the shoes removed, and put the feet into a tub of hot water. Wind flannel wrappings or bandages around both legs up to the elbows, and keep them constantly wet with hot water for from two to three hours. In the meantime have the horse well covered with blankets, and give the following remedy:—

30 drops fluid extract aconite.
1 ounce oil of sassafras.
2 ounces salt-petre.
1 pint linseed oil.

"This is to be given at once. There will be a profuse perspiration in from fifteen to twenty minutes. Keep the blankets on about six hours, then remove and put on dry ones. Keep wet swabs on the horse's feet, and stand him on wet clay. All stiffness and soreness in the feet will be removed in from thirty-six to

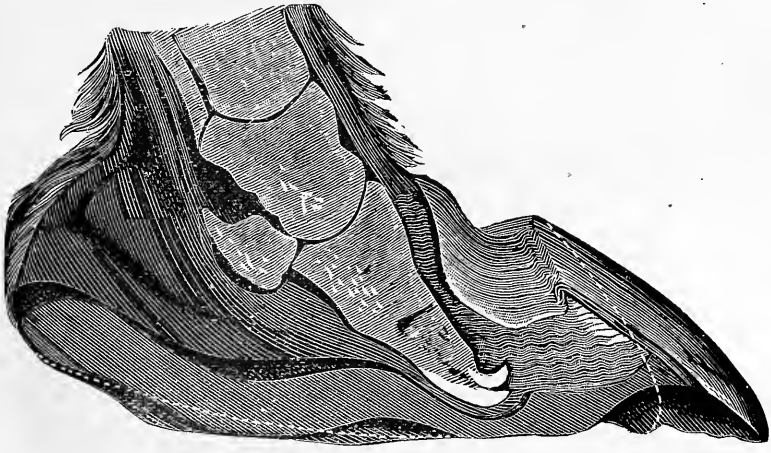


Fig. 740.—Internal view of Fig. 737, showing the great displacement of pedal bone. The dotted lines show the point to which the foot should be trimmed.

seventy-two hours. In the meantime give one of the following powders:"—

3 ounces bicarbonate of potash,
6 ounces nitrate of potash,

Make into six powders, and give two every eight hours until well.

Dr. William Shepherd, of Ottawa, Illinois, in an address before the State Veterinary Association, advised treatment as follows:—

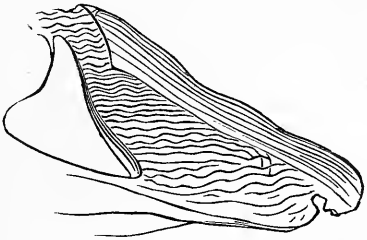


Fig. 741.—Showing the direction of the bone-cells as thrown out from the podophyllous tissue.

"In the treatment of acute laminitis, as soon as possible after having discovered that the animal has been foundered in the feet, or has acute laminitis, which is the same thing, have the shoes taken off, place the feet in a deep tub of warm water in which some hay has been put to form a soft foundation for the tender feet to rest

on. Keep them there for about an hour, then take them out and put them in warm poultices, composed of equal parts of slippery elm bark and linseed meal. Be sure the poultices envelop the whole hoof. Have a deep soft bed placed under the animal. Give a purgative, which should be one-half of the ordinary dose, as superpurgation is apt to follow otherwise. If Barbadoes aloes be the agent employed, four drachms will be found sufficient. Give a dose of aconite, say ten drops every twenty minutes, until the animal has been thrown into a profuse perspiration. Cover him with warm blankets. The poultices should be changed twice a day, and after taking them off put the feet in water, as above recommended. Continue this treatment for three or four days at least. Feed no grain, simply bran mashes, vegetables, and hay. When shoeing

Fig. 742.—Position of the bones of the foot in a healthy condition.

the animal, see that the shoes are wide-webbed, the hoof-surface being convex, still leaving sufficient flat surface for the wall of the hoof to rest comfortably on. If it is a valuable beast, have him turned out on low land pasture in about two weeks after the commencement of the attack. Should he be stabled, keep damp swabs on while he is housed. This treatment is applicable to either acute or sub-acute, which I have here treated as one disease, and which, in fact, it is."

Dr. Hamill Advises.

If there is simply a congestion of the extremities and fever, then treat as a fever locally and generally. Give as sedatives aconite and nitre internally, with cooling applications locally to the feet. If the inflammation is so extreme as to cause a destruction of the suspensory power of the laminæ, then it is advis-

able to bleed quickly. If purgatives are advisable, give calomel and aloes in the proportion of 1 to 2 drachms of calomel to 4 to 7 of aloes.

In a conversation with Dr. Walton (house surgeon of Columbia Veterinary College) on this subject, he advised treatment as below, and the better to explain it, referred to treatment pursued in the management of a very bad case, as follows:—

"The horse had been driven through a rain-storm twenty miles; was stiff in all four feet, and unable to stand. The shoes were removed, and poultices applied to the feet. At first, aconite 15 drops, then 10 drops an hour were given for the first 3 or 4 hours. At the same time, as the horse was in considerable pain, hypodermic in-

Fig. 743.—Abnormal condition of foot caused by Laminitis.

jections of about two grains morphine twice a day, ½ oz. dose nitrate of potass four times a day, were given. Water was given freely. He recovered in four or five days. His temperature was 105°. As soon as the fever commenced to abate, the aconite was reduced to five drops about every three hours."

Prof. Williams says:—

"Should there be much fever, I know of no treatment so effectual as aconite in repeated doses, giving 20 drops of the tincture of the root every two hours in water, until the pulse decidedly falls. If the pain is very severe, I advise giving attention to this first by administering one or two full doses of opium or morphine. For local treatment to the foot, I advise enveloping in large warm poultices, or wrap in numerous woolen cloths, and keep them wet with hot water. After the urgent symptoms have passed off, cold instead of hot applications will prove most effectual.

A country horse doctor of my acquaintance, who is a good deal of a genius in his way, treated laminitis with decided success as follows :—

"First, put the feet of the horse, up to the knees or over, into as hot water as he can bear, to which add one pound of mustard, and have a man on each side with a sponge apply the water from the tub to the chest and shoulders for twenty-five or thirty minutes, adding more hot water as it cools. Next, take him from the bath to a close stall, and cover with three or four heavy blankets, and let the men rub his legs for half an hour, then bleed in plate-veins (the large veins running down the inside of the leg, above the knee), taking from a pint to a quart of blood from each leg ; after which

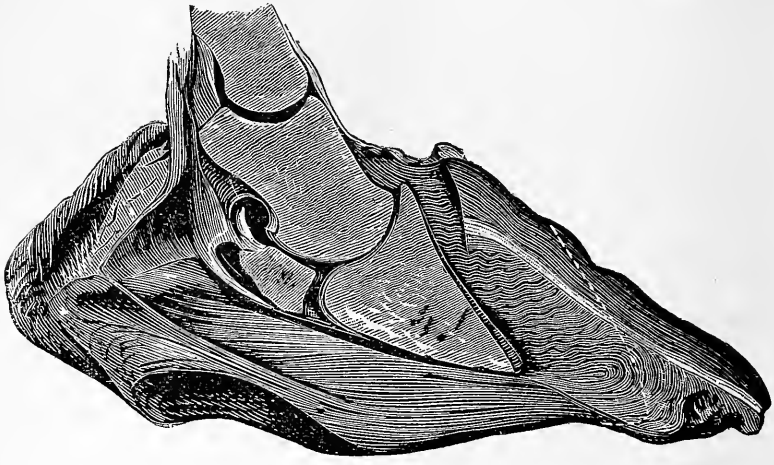


FIG. 744.—A sectional view of Fig. 741. An exact drawing of specimen showing grain of new growth of soft, spongy horn.

apply some moderately stimulating liniment to the legs and shoulders to keep up the circulation, and give a dose of physic. Remove one blanket after another as he cools off, leaving on the last one, and give some soft feed. On the second day exercise the horse a little, and usually on the fourth day he is in a condition for work."*

I have included this variety of treatment the better to give a clear understanding to stablemen and others as to what they can do in an emergency. The first method, which I will call Summerville's, I know to be entirely reliable ; at all events, I have not known of a single case out of a large number treated on this plan

* The horse on no account should be put to work so soon if it can be avoided.

that did not entirely recover, without, so far as I could see, any evidence of the sole dropping. But as few have the conveniences, or know how to bleed, it is very important to be able to treat such cases without bleeding. On this account, I have added the details from other leading practitioners, and, as will be seen, there is the best of assurance of other treatment being equally reliable. In any event, should the farmer or horse owner find his horse foundered, and no veterinary surgeon available, he can at least resort to the simplest methods, such as putting the feet in a tub of hot water, in which is a lot of hay or straw; bathing the forward parts thoroughly, as directed by Dr. Meyer or the country horse-doctor. If there is much fever, and the fever medicine or aconite is available, give that. Give all the water the horse wants to drink, which should have the chill taken off; open the bowels by enemas and back-raking; give a little saltpetre in the water; feed bran mashes and boiled oats, in addition to keeping the body comfortably clothed, etc., or cover the feet with poul-

FIG. 745.—Posterior sectional view of pedal bone showing changed and weakened condition from the effect of inflammation.

FIG. 746.—Inferior view of bones shown in Fig. 745. Part to the right diseased.

tices as directed. The important point is not to lose time in combating the difficulty from the start, but resort to all means available that will give relief, and thus a valuable horse may be saved, which under the ordinary circumstance of delay, indecision, and ignorant bad treatment, would be inevitably ruined.

I have forgotten to mention in place, that it is important, when there is extreme pain, to give relief for it by giving one to two drachms of powdered opium or five to ten grains of morphine, or, if available, by injecting under the skin one to two grains of morphine, as there is nothing that tells upon the strength of a horse so quickly as severe pain.

Chronic Founder.

When the inflammation is very intense, and is allowed to continue very long, there is an exudate or lymph thrown out that separates the wall from the sensible laminæ at the toe. In time there are immorphus horn cells, grown from the sensitive laminæ, or phodofilous tissues of the coffin-bone, making a soft, spongy horn, which, pressing against the wall in front, forces the anterior part of the bone downward against the sole, making it bulge downward, and in some cases perforating it, with a corresponding falling in of the wall above, producing what is termed a drop sole, which will be more or less marked according to the amount of disorganization. I give two very interesting specimens of extreme cases. The first was obtained by me of Prof. Cressy, of Hartford, Conn.; the second from a specimen furnished by the Columbia Veterinary College, N. Y. They are drawn half size, and are exact reproductions of the originals. When there is inflammation in the feet involving the bones, it is surprising to what degree the pedal bone is liable to become absorbed, changed in form, and have its texture weakened. Figs. 745 and 746, which were also obtained from Dr. Cressy, show the great amount of change and absorption that may be produced from this cause. They represent the superior and inferior views of a bone that had been very much absorbed and turned up at the outer edge, cut in two, and united to sections of an ordinarily healthy bone, to show the extreme change produced in its form. The part outside the dotted lines was so porous that it could be looked through as

plainly as through the texture of coarse cloth, and its fibre was so weak that it would crumble between the fingers. Fig. 747, also obtained from Prof. Cressy, is another interesting specimen showing the upper view of another bone of the same character. Fig. 748 is a side view of this bone, taken on an exact scale, showing the remarkable bending up of the edges, and its thinness, it being not over three-quarters of an inch at the pyramidal process or front of the joint. Fig. 749 is a bottom view of the same kind of bone, and was obtained of Dr. Walton of the Columbia Veterinary College. Being engraved from a photograph, it did not work up so well. Instead of being flat as it appears, the outer edges were bent upward over a quarter of an inch, with the edges ragged and broken.

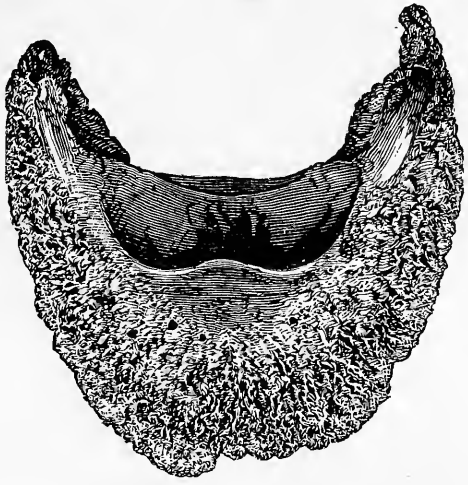


FIG. 747.—Showing absorption and change of form in pedal-bone,—the effect of inflammation.

FIG. 748.—Side view of the above, showing bending up of the edges, etc.

I include also a specimen showing effect of inflammation by the pressure of the toe-calk, and excessive rasping of the wall. Fig. 750. These remarkable changes of structure in the foot generally, especially in the pedal-bone, when compared with that in a state of health, we see to be very great, and explain the destructive effect of inflammation when allowed to continue for any length of time. Reference can also be made to the many interesting specimens following the chapter on Navicular-Joint Lameness showing this. Many of these specimens will show not only the navicular but the outer edge of the pedal-bone to be fractured.

In some extreme cases where inflammation runs high, and is allowed to continue very long, this separation of the wall from the internal structure may be continued so far as to cause ulceration of the coronet and loss of the entire hoof; but this is rare.

There is no cure for chronic founder. All that can be done is to palliate it to the best advantage. Some good practitioners, when they suspect any exudate at the toe, and a separation of the laminæ, open the toe, so as to give free vent to it. This I would regard good practice. When there is some dropping of the sole, the best way to produce a healthy condition of circulation and cell-growth is to put on tips or very thin shoes that will allow pressure upon the sole. (See Tip's, page 643); better still in addition would be allowing the horse to run on soft or gravelly ground. (See standing on ashes, etc., on next page).

Fig. 749.—Inferior view of pedal bone. Last referred to in text.

Peditis, or Inflammation of the Os Pedis.

When there is severe inflammation of the feet (laminitis) the Periosteum (membrane covering the bone) and the pedal bone sometimes become involved, when it is termed Peditis.

This is indicated by the horse showing intense pain, getting up and lying down often. No local treatment seems to check the structural changes that go on; it will run from one to two months; the horse has a ravenous appetite all the time, and as a rule does not lose flesh. If temperature rises, give sedative treatment,—opium, aconite with nitrate of potassa in small doses

(not over 1 ounce a day divided into two parts and given in water). When the temperature gets down to 102°, stop internal treatment, and treat locally about as follows: It is necessary to have a stall with a soft bottom as saw-dust, ashes, etc. Occasionally it is best to dampen the ashes a little during the day, and rake them up so as to form a yielding body to the feet. Throw a little bedding over it at night, and also during the day to give the horse a chance to lie down.

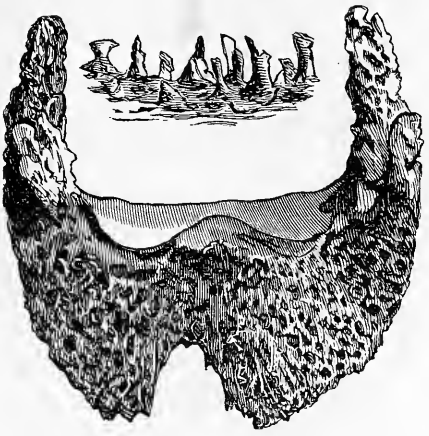


FIG. 750.—Showing effect upon the bone of pressure of toe-calk and rasping hoof.

Treatment.—Apply cooling applications, such as cold swabs; that is, cover the feet with two or three thicknesses of blankets, and keep wet with cold water. After the acute symptoms subside, blister. The point is to lower the fever, and check the flow of blood to the feet.

CATARRH.

Catarrh, or "cold in the head," is an affection of the lining membrane of the nasal chambers and cavaties of the head. It consists in a congested or inflamed state of that membrane, giving rise to a glairy discharge from one or both nostrils, and when the head of the windpipe (*larynx*) is implicated, accompanied by a cough.

Causes may be classed under predisposing and exciting, as the majority of young horses under five years of age may be said to be predisposed to this affection. The exciting causes are sudden variations in the state of the temperature; undue exposure to cold when an animal is in a heated state, especially after a hard day's work or drive; standing in stables badly ventilated, or any place exposed to cold draughts. Perhaps the most common cause in young horses is placing them in warm stables in the fall of the year immediately on taking them off the pastures. A sudden

change from a cold to a hot temperature is more likely to cause catarrh than a change from a hot to a cold one.

Fig. 751.—Suffering from cold.

Symptoms.—If the horse is standing in the stable he will appear dull, and incline to hang his head in the manger; the mouth is hot, and the pulse quickened and weak; the coat is staring, and the lining membrane of the nose is reddened and injected. If the larynx is involved, steady pressure on that region will cause coughing. This is the congestive stage, which speedily passes off, and exudation takes place from the vessels, causing a discharge from the nostrils, at first watery, gradually becoming thicker, and of a yellowish color. In some instances this matter becomes pent up within the sinuses of the head, and comes away in large quantities every of three or four hours. A watery discharge from the eye is also very often an accompaniment of catarrh. If these symptoms become aggravated, the appetite is impaired, the bowels are costive, and the fœces passed are of a clayey nature, the legs and ears are cold, and the breathing accelerated. Catarrh, if improperly treated, or the animal kept at work and exposed to sudden changes of temperature, is very apt to descend to the chest, and is a prolific source of other and more serious diseases, as inflammation of the lungs (*pneumonia*), or of the covering of the lungs (*pleurisy*), or of the bronchial tubes (*bronchitis*).

Fig. 752.—Nose-bag.

In the majority of cases catarrh is but a simple affection indicated by a little increase of pulse, a slight discharge from the nose and eyes, the hair roughened, not much appetite, and some cough, which is sometimes severe, and if the patient gets anything like proper usage or treatment no very serious results generally follow.

Treatment.—At once place the animal in a comfortable, well-ventilated, loose box, as should be done in all affections of the chest; blanket warmly, give aconite or some of the fever

medicine ; if the case is serious, as stated, it may run into general inflammation of the air passages, as bronchitis or laryngitis ; also hand-rub and bandage the legs ; the clothing and bandages must be removed twice a day, and the body well rubbed over. Give one or two drachms of aloes in solution combined with half a drachm of powdered ginger. Steam the head by means of a nose bag partly filled with scalded bran, into which put an ounce or two of turpentine. Hang the bag on the head same as in cut, being careful not to have it so tight around the nose as to heat or scald it, and be oppressive. Many cases have been suffocated by having the bag brought too tightly over the nose. A few repetitions of this will cause the nose to run freely. Nurse by giving bran mashes, boiled oats, etc. Rest and care will usually do the rest. In mild cases it is not necessary to use the nose bag. A few doses of tartar emetic and nitrate of potash may be given daily in a bran mash, and the throat rubbed with a stimulating liniment. If there is much inflammation of the throat and air passages, any good liniment may be applied on the throat and around the chest and bandaged as shown in cut.

Laryngitis, or "Sore Throat,"

Consists in inflammation of the mucous membrane of the head of the windpipe (larynx). It is generally called "sore throat," and is a very common affection among horses, occurring in a variety of forms, being sometimes of a very acute nature, and running its course with great rapidity ; in other cases of a milder type, and assuming what may be called a sub-acute form.

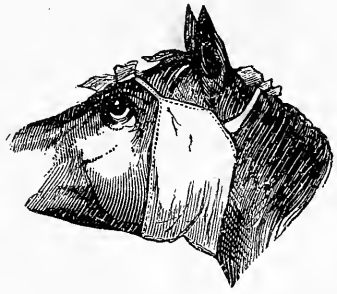


Fig. 753.—Simple method of covering the throat.

Causes are similar to catarrh, as undue exposure to cold and variations in the temperature ; but in some seasons it appears as an epizootic disease, large numbers of horses becoming affected with it about the same time. These cases are always of a typhoid nature, more especially when occurring in stables insufficiently ventilated.

Symptoms of "sore throat" are well marked. The horse holds his head stiff, with his nose poked out, showing the muscles of the neck prominently; he has considerable difficulty in swallowing; if he attempts to drink, part of the water is returned

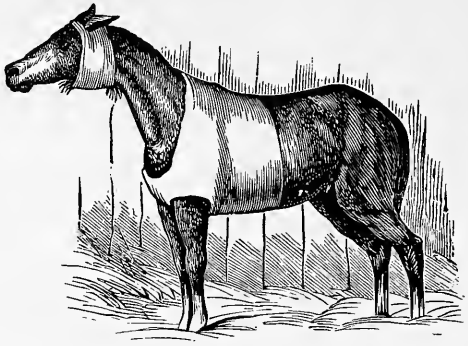


FIG. 754.—Method of covering the throat and chest for laryngitis.—*From Mayhew.*

through his nostrils; the throat is painful to the touch, and the least pressure excites a violent fit of coughing. At the commencement of the disease it is difficult to distinguish it from "dis-

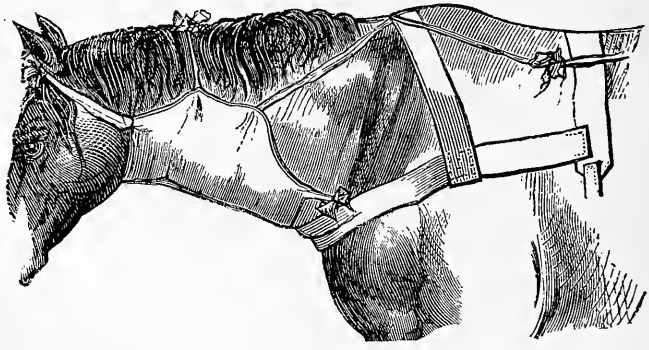


FIG. 755.— Good method of covering the throat for fomenting, or applying stimulants, for laryngitis.

temper" (strangles). By the third or fourth day the difference can be easily seen; the usual tumor of distemper does not appear. The pulse varies; in some cases but little altered, in others very quick and weak. The coat is also staring, and the function of the kidneys partly arrested. In severe cases the breathing becomes heavy and laborious. By the third or fourth day from the

beginning of the attack, a greenish yellow matter is discharged from the nostrils.

Treatment.—The general and local treatment should be very much the same as for cold or catarrh, with the addition of a free use of counter-irritants to the throat, as mustard well rubbed in, or any good stimulating liniment, or even a light liquid blister. Aim to keep up the strength by feeding soft, easily digested food; bran mashes with a little boiled oats in it, carrots, etc., any food that he can eat easily.

When the bowels are constipated, as is often the case, clysters of soap and water must be freely used. When the cough is severe and hacking, the following ball may be given once or twice a day:—

1 drachm camphor.
1 drachm powdered opium.
2 scruples extract belladonna.

If the horse is threatened with suffocation, the windpipe should be opened, and a tube inserted. (See description of operation under head of Tracheotomy.)

One of the leading practitioners of the country dictated to the writer the following as his best treatment:—

Counter irritation of the larynx. The best internal remedy would be,

2 drachms extract of belladonna,
1 ounce chlorate of potass,

With a sufficient quantity of honey to be made into the form of an electuary, and applied with a spoon to the back of the tongue. Also use one-half ounce doses of chlorate of potass put into a pail of water, and allowed to remain in front of the animal.

Strangles, or Horse Distemper.

This is another form of sore throat occurring mostly in young horses from two to five years old, and which is familiar to every one. Its design seems to be to throw some poisonous matter from the system, and the object should be to keep the strength of the animal up, and hasten suppuration.

The exciting causes are similar to catarrh, transition from cold to heat, as from the pasture to the stable, change of stable from the country to the city. It occurs most commonly in spring, and is usually seen in cold, damp weather.

The general symptoms are very much the same as explained in the previous difficulties, the distinguishing points are, the horse is out of sorts; the neck become sore and stiff; an enlargements appears between the branches of the jaw, which is hot and tender; there is some discharge from the nose. In ordinary cases the tumor goes on to suppuration; a copious discharge of thick yellow matter takes place from the nostrils; in about a week the tumor has matured, becomes soft, and points, and either bursts or should be opened; continues to discharge for some time, and gradual recovery takes place. But if the case is very severe it will grow worse, often threatening to cause suffocation. The horse is able to eat or drink but little, and strength is lost rapidly.

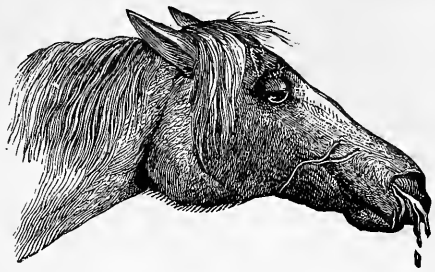


FIG. 756.—Horse with strangles.

Treatment.—Provide a comfortable, well-ventilated stall; clothe warmly; rub and bandage the legs; nurse by giving bran mashes, boiled oats, carrots, etc. Bowels should be opened by injections. Use freely a poultice made of wheat bran and warm vinegar, changing as often as the poultice becomes dry, using the eight-tailed bandage until the enlargement becomes soft and can be opened, when relief will be prompt. Or the following treatment may be adopted, which is very good and in some cases may be preferable: Take spirits of turpentine, two parts; spirits of camphor, one part; laudanum, one part. Put this on the neck with a brush, if convenient, or in any-way to apply it without exciting pain, three or four times a day until soreness is caused. After each application, have ready three or four pieces

FIG. 757.—Simple method of covering the tumor when stimulated.

of flannel, which should be a good thick article; put these over the parts, and bind on with the eight-tailed bandage. Or hot fomentations and poultices can be freely applied to the tumor

Fig. 758.—The eight-tail bandage.

so as to encourage the formation of matter. When the tumor points, open it by cutting through the skin, and if necessary

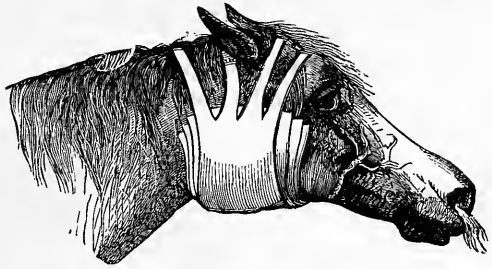


Fig. 759.—The eight-tail bandage as adjusted.

enlarge the orifice by pushing in the finger, also small doses of saltpetre should be given in the feed, or the following powders night and morning:—

1½ ounces nitre.
6 drachms tartar emetic.
Mix and make into six powders.

Sometimes the inflammation is so deep as to cause serious soreness and swelling of the throat. In this case the horse must be nursed carefully by feeding warm gruel; the drink should be warm; grass or anything that will tempt the appetite should be given.

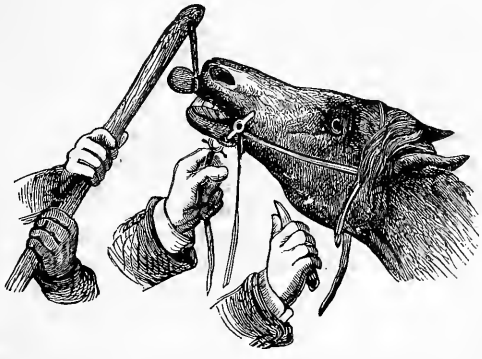


Fig. 760.—Opening the abscess in strangles.

Glanders and Farcy.

I consider these difficulties mainly to enable the detection of them to prevent their spreading, as they are extremely contagious to both men and horses. They are incurable, and to guard against the possibility of danger when a case is suspected, the only safe way is to at once either isolate or destroy the animal.

Fig. 761.—An ordinary case of farcy.

I depend mainly for my explanation of these diseases upon several old authors.* They fully agree with the statements of modern authors that it is practically useless to tamper with glanders. Farcy in its early stage can be controlled without difficulty, but the medicine injures the constitution seriously, and in addition, it is rarely that the disease will not soon break out again or develop glanders.

"*Symptoms.*—The distinctive appearances which glanders present may be slow in their development, and may continue for years, during which he may feed and work well, constituting *chronic glanders;* or they may run on rapidly, and in two or three weeks are well marked and soon come to a fatal termination, when it is called *acute* glanders.

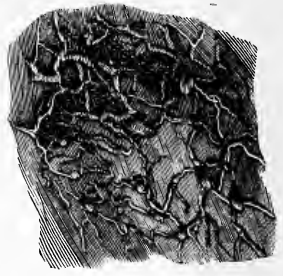


Fig. 762.—A piece of farcied skin.—*From Mayhew.*

"The coat is rough and staring; he is usually hide-bound; the belly drawn up, and constitutional disturbance exists, the pulse being easily excited; the membrane lining the nostrils is of a leaden hue; the glands inside the lower jaw where the pulse is felt become enlarged, hard and nodular like a mass of peas or beans, especially on the side from which the discharge takes place —usually the left, sometimes the right, or even from both;—the discharge is clear and watery at first, becoming thicker and sticky, accumulating around the nostril; cough may be present, but it is not an invariable symptom. As it advances, the discharge increases, becomes purulent, of a greenish color, sometimes mixed with streaks of blood; it is of a heavy specific gravity, and if dropped into water sinks to the bottom; it has a very offensive smell; the

* Turner, Youatt, M. Volpi, White, and others.

gland on the affected side becomes hard and adherent to the side of the jaw; ulcerating tubercles form on the nostrils, which have a mouse-eaten appearance, being raised and irregular at the edges, and depressed in the center; they run into patches, and spread over the whole nasal septum; weakness and emaciation set in. The ulceration in some cases extends to the cartilages, and even the bones are sometimes implicated, when occasional bleedings en-

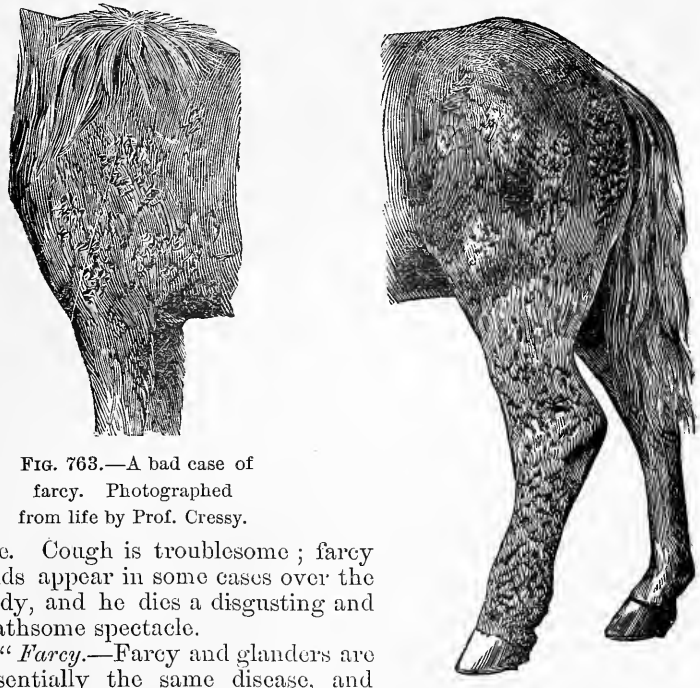


FIG. 763.—A bad case of farcy. Photographed from life by Prof. Cressy.

sue. Cough is troublesome; farcy buds appear in some cases over the body, and he dies a disgusting and loathsome spectacle.

"*Farcy.*—Farcy and glanders are essentially the same disease, and depending on the same specific poison in the blood, but manifesting itself in a different locality. It often occurs in connection with glanders, but is also seen independent of it, running into glanders as it progresses.

"*Symptoms.*—It usually affects the superficial absorbents of the hind limbs in the groin, extending downward on the inside of the thigh, following the line of the lymphatics, also along the absorbents of the neck and shoulders; little tubercles, or farcy buds, form, which in some cases become indurated and lie dormant for a time, but in most cases they go on to ulceration, producing angry, irregular ulcers similar to the ulceration in glanders; the virus being conveyed along the absorbents, the buds extend in knots; lines of corded and inflamed absorbents are felt extending from below upward, the hair being rough and bristling along their course; by and by swelling of the legs sets in; as it goes on he becomes

emaciated; the ulceration attacks the nostrils, and glanders and farcy are combined, and death relieves him at last.* A disease called watery farcy must not be mistaken for genuine farcy."

As there is liable to be considerable difficulty experienced in diagnosing glanders from common running of the nose from cold, strangles, or nasal gleet, I include the best description I can find of the symptoms as they progress.

"The earliest symptom is an increased discharge from the nostril, small in quantity, constantly flowing, of a watery character and a little mucus mingling with it. Connected with this is an error too general, and highly mischievous with regard to the character of this discharge in its earliest stage of this disease, *when the mischief from contagion is most frequently produced.* The discharge of glanders is not sticky when it may be first recognized. It is an aqueous or mucous, but small and constant, discharge, and is thus distinguished from catarrh, or nasal gleet, or any other defluxion from the nostril. It should be impressed on the mind of every horseman that this small and constant defluxion, overlooked by the groom and by the owner, and too often by the veterinary surgeon, is a most suspicious circumstance.

"Mr. James Turner deserves much credit for having first or chiefly directed the attention of horsemen to this important but disregarded symptom. If a horse is in the highest condition, yet has this small aqueous constant discharge, and especially from one nostril, no time should be lost in separating him from his companions.†

"This discharge, in cases of infection, may continue, and in so slight a degree as to be scarcely perceptible, for many months, or even two or three years, unattended by any other disease, even ulceration of the nostril, and yet the horse being decidedly glandered from the beginning, and capable of propagating the malady. In process of time, however, pus mingles with the discharge, and then another and a characteristic symptom appears. Some of this is absorbed, and the neighboring glands become affected. If there is

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* Fig. 762 is a very good illustration of a bad case of farcy photographed from life.

† Mr. Turner, during his experiments, refers to a fine mare that had simply a slight running of mucus from one of the nostrils which he pronounced glanders, and highly contagious. Regardless of his advice, the mare was sold. Months afterward he found a number of horses in a stable suffering from glanders, all having undoubtedly taken the disease from this mare, she having been worked and stabled with them. A large number of cases are referred to by others, caused by being put into the stalls that had been occupied by horses showing the above symptoms; in one case one horse was the means of inoculating a whole troop of army horses, making it necessary to destroy them all. So it is best to be on the safe side by taking the greatest possible precaution when a case is suspected.

discharge from both nostrils, the glands within the under jaw will be on both sides enlarged. If the discharge is from one nostril only, the swelled gland will be on that side alone. Glanders, however, will frequently exist at an early stage without these swelled glands, and some other diseases, as catarrh, will produce them. Then we must look out for some peculiarity about these glands, and we shall readily find it. The swelling may be at first somewhat large and diffused, but the surrounding enlargement soon goes off, and one or two small distinct glands remain; and they are not in the center of the channel, *but adhere closely to the jaw on the affected side.*

"The membrane of the nose should now be examined, and will materially guide our opinion. It will either be of a dark purplish hue, or almost of a leaden color, or of any shade between the two; or if there is some of the redness of inflammation, it will have a purple tinge; but there will never be the faint pink blush of health, or the intense and vivid red of usual inflammation. Spots of ulceration will probably appear on the membrane covering the cartilage of the nose—not mere sore places, or streaks of abrasion, and quite superficial, but small ulcers, usually approaching to a circular form, deep, and with the edges abrupt and prominent. When these appearances are observed there can be no doubt about the matter.

"When ulcers begin to appear on the membrane of the nose, the constitution of the horse is soon evidently affected. The patient loses flesh; his belly is tucked up; his coat unthrifty, and readily comes off; the appetite is impaired; the strength fails; cough, more or less urgent, may be heard; the discharge from the nose will increase in quantity, it will be discolored, bloody, offensive to the smell; the ulcers in the nose will become larger and more numerous, and the air-passages being obstructed, a grating, choking noise will be heard at every act of breathing. There is now a peculiar tenderness about the forehead. The membrane lining the frontal sinuses is inflamed and ulcerated, and the integument of the forehead becomes thickened and somewhat swelled. Farcy is now superadded to glanders, or glanders has degenerated into farcy, and more of the absorbents are involved.

"At or before this time little tumors appear about the muscles, and face, and neck, following the course of the veins and the absorbents, for they run side by side, and these the tumors soon ulcerate. Tumors or buds, still pursuing the path of the absorbents, soon appear on the inside of the thighs. They are connected together by a corded substance. This is the inflamed and enlarged lymphatic; and ulceration quickly follows the appearance of these buds. The deeper-seated absorbents are next affected; and one or both of the hind legs swell to a great size, and become stiff and hot, and tender. The loss of flesh and strength is more marked every day. The membrane of the nose becomes of a dirty, livid color, the membrane of the mouth is strangely pallid. The eye is infiltrated with a yellow fluid; and the discharge from the nose becomes more profuse, and insufferably offensive. The animal presents one mass of putrefaction, and at last dies exhausted."

As stated before, chronic catarrh is a discharge from the nose, affecting only the lining membrane of the nose ; and there may be also enlargement of the glands, staring coat, and debility, so that it is sometimes difficult to distinguish one from the other during the early stage of glanders. Then again, ulcerated teeth may produce the same symptoms of discharge from the nose of a very offensive character, which may be taken for glanders. So that, when there are the characteristic symptoms of glanders, it is very important to look closely to the condition of the teeth—is there any enlargement or ulcerous secretions in their neighborhood, which may extend into the nasal cavity ? When the horse is valuable, and there is any doubt about the case, the best way is to inoculate some worthless horse with some of the virus ; if glanders, it will show itself very quickly.

"The usual method of doing this is to first cut off the hair from the side of the neck or other part of the body about the size of a half dollar ; then take a lancet and pass it under the cuticle, or scarf-skin, only deep enough to bring a few drops of blood. The matter is to be introduced into this opening with a thin slip of wood of the form of the lancet. If the matter is glanderous, the part will become sore in two or three days, and a scab will form on it, which, in a few days will be thrown off, leaving a peculiar kind of ulcer, which will often spread rapidly, causing a painful swelling of the adjacent parts, with corded lymphatics and farcy buds. In about a fortnight the glanders will appear."

Prof. Robert Jennings, of Detroit, an old veterinarian of much experience, speaks in the Veterinary Journal of Comparative Medicine of a number of cases supposed to be glanders, which proved to be caused by ulceration of the teeth, which he cured without difficulty. Could refer to a number of cases of this character if necessary. The test of inoculation would of course be conclusive.

Treatment.—The following are favored prescriptions for farcy :—

5 grains arsenic.
1 drachm extract of nux vomica.
For a drench in a pint of water twice a day. —*Prof. Williams.*

1 drachm sulphate of copper.
1 drachm iodine.
This amount in a pint of water twice daily.—*Prof. Williams.*

½ drachm sulphate of copper.
½ drachm sulphate of zinc.
3 drachms anise-seed.

Make into a ball with common mass, and give once a day.—*Prof. Gamgee.*

1 drachm sulphate of copper.
1 scruple calomel.
3 drachms to ½ ounce common turpentine.

Liquorice powder, enough to form the ball.—*Prof. Coleman.*

3 drachms of sulphate of copper given every night in the food until the animal refuses to eat. After a few days repeat; but if the case is bad, give the medicine in water as a drench, if he will not take it in his food.—*An Old Practitioner.*

The following, which was obtained by the writer years ago in Ohio, was regarded very valuable for the cure of farcy. It was claimed to be a great secret, and was repeatedly sold for fifty dollars, as a specific for farcy :—

¼ pound sulphur.
⅛ pound saltpetre.
1 ounce black antimony.

If acute, give one tablespoonful twice a day. If sub-acute, once or twice a week.

Two parties who have used the above, assured the writer that they had cured farcy with it, and regarded it a very valuable prescription.

The ulcers are to be opened and dressed with disinfectants, and treated as for an ordinary ulcer, great care being taken not to get any on the persons, as, should there be the least abrasion of the skin, it would inoculate the system.

It is proper in this connection to state that glanders may be developed in consequence of being kept in low, damp, badly ventilated stables, when debilitated by hard work and insufficient nourishment; also as a sequel of weakening complaints, such as neglected or improperly treated strangles, influenza, etc.

When glanders is known to have existed in a stable, or is seriously suspected, it is advisable to thoroughly cleanse the manger, etc., so as to prevent the possibility of contagion. The most careful experiments have proved that glanders can only be communicated by the virus; and though it may be dried and lay for even a year, it has still sufficient vitality to impregnate with the

disease. It has been supposed that the only way to get rid of it would be to tear down the stable and build it anew—an old veterinarian of much experience so stated to the author as his opinion.

But the following precautions are now regarded to be entirely sufficient: The manger, rack, or whatever there has been within the reach of the horse, upon which matter could be thrown or could touch,—and this will include partitions and every part or object in the vicinity,—should be scraped, and scoured with soap and water and then thoroughly washed with a solution of chloride of lime, about a pint of the chloride to a pailful of water; the walls should be whitewashed; the pails newly painted, and the iron work exposed to a red heat; the halters, clothing, etc., used upon the case should be burned. The only means of preventing the disease is to keep the stable cool and well-ventilated. Hot, close, badly-ventilated stables, it is claimed by all authors, are strong causes of the disease.

There are many jockeys who make it a business to trade for horses of this character, fix them up by cleansing the nostrils, etc., and trade them off. As before stated, during the early stage it can only be detected by slight running from the nose. Such villainous practice cannot be too severely condemned as a crime, which should be promptly punished to the extent of the law.

Chronic Cough

Is often a sequel of sore throat (laryngitis), as also of distemper (strangles), and is a disease from which, when once fairly established, complete recovery seldom occurs. It consists in a chronic inflammation of the many glands imbedded within the lining membrane of the larynx, causing an irritation of that highly sensitive organ. The cough is easily excited by pressure externally, and is of a deep hollow nature, differing materially from the loud sonorous sound of the healthy cough.

It is often associated with other diseases of the chest, as broken wind, thick wind, etc. The cough is generally most severe in the morning or after meals, and is always aggravated by gross feeding. In many cases chronic cough interferes but little with a horse's usefulness, especially if he is used for ordinary farm work, but it must be considered an unsoundness.

Treatment.—If the horse has been affected for some time, treatment is generally very unsatisfactory, and must be more of a palliative than a remedial nature. If only recent, treatment may be undertaken with better chances of success. Give the cough ball as recommended for laryngitis, and apply the following liquid blister, or any good counter-irritant, externally, and in some cases great benefit will attend the use of setons.

Olive oil.
Oil of turpentine.
Aqua ammonia, equal parts.

To be shaken well and rubbed on with the hand.

If occurring from intestinal disorder, the treatment of course must be directed to the proper seat. The medicinal treatment is greatly assisted by feeding the animal properly and regularly, giving small quantities of food at a time ; carrots in winter, and green food in summer should be given. Feeding nice clean cornstalks is much better than hay ; if hay is fed, it should be bright and clean, or the dust shaken out of it, and dampened a little, and of this only a limited quantity should be given. If a greedy eater, either remove from his reach the bedding, which he will be likely to eat, or put on a muzzle. The following are also excellent cough remedies :—

1 drachm camphor.
1 drachm powdered opium.
1 drachm powdered digitalis.
1 drachm calomel.

Make into a ball and give every second morning until six doses are given.

½ pint tar-water.
½ pint lime-water.
1 drachm powdered squills.

This drink every morning in obstinate coughs. As a sedative to allay the violence of the cough,

4 drachms nitre.
2 drachms powdered opium.
1 drachm prussic acid (dilute).

Mix in a pint of mucilage or linseed tea, and give half a tumblerful three times a day.

An old writer says, "I have known an obstinate cough cured by drenches composed of a sirup made of molasses and vinegar; also by a decoction of garlic with linseed oil. Barbadoes tar and oil with balsam of sulphur, have also been employed as remedies for a cough."

The following is also an excellent remedy :—

2 to 3 dr. gum ammoniac.
1 dr. powdered squills.
1 dr. camphor.
1 dr. ginger.
2 dr. castile soap.
20 drops oil of anise-seed.
Sirup and flour enough to form a ball.

A favorite prescription for curing cough : Put into alcohol all the tar it will cut; add one-third in quantity of tincture belladonna. Dose, from one to two teaspoonfuls once or twice a day.

A simple remedy which will sometimes work very nicely is,—

Fluid extract belladonna 10 to 15 drops in a tablespoonful of water on the tongue three or four times a day. If there is swelling of the glands of the neck, rub on a sharp stimulant or mild blister.

The writer has used this very successfully, and, in fact, mainly depended upon it when on the road for allaying attacks of coughing.

Heaves, or Broken Wind.

"Heaves are indicated by an increased action of the flanks The inspiration is natural, but the expiration requires two efforts to expel the air. There is at times a short cough or grunt while the air is being expelled from the lungs. Heaves are never found in the racing stable where the horses are properly fed. They are always found among cart or team horses which are fed upon large quantities of coarse food or hay. The seat of the disease is found in the air cells of the lungs in the form of enlargements and sometimes ruptures of the cells. The cause of the disease is the immense quantity of hay forced into the stomach, the greedy animal, perhaps, not being satisfied with his allowance, eats the bedding. The bowels and stomach press hard against the diaphragm, and the lungs not having room to expand, the air cells are enlarged or ruptured, and the horse is said to have the heaves. Much has been said by different authors in relation to the curability of the heaves. Some advocate one means, some another, among which is feeding on the Western plains, or upon prairie hay which is said to contain a 'rosin weed;' but like many other remedies, it is only palliative.

"In 1842 Capt. Squiers, of Buffalo, N. Y., who commanded on

the steamboat 'Dewitt Clinton,' owned a valuable trotting mare called Caroline. She had the heaves badly. He took her, in the spring of that year, to Chicago, and turned her out to pasture on the prairie, for the purpose of curing the disease. In the fall he brought her back on his boat, with a quantity of prairie hay to keep her during the winter. During the time she ate the hay, she had no symptoms of heaves. But upon returning again to timothy hay, the heaves returned as bad as before being sent West. (The writer was personally acquainted with Captain Squiers, he being proprietor of the Courter House at that time, where the writer boarded with him.)

"Prairie hay and grass is more laxative than timothy hay, and the animal cannot eat half as much in a given time of the former as of the latter. Consequently it promotes a condition favorable to respiration, by stimulating the bowels, and also prevents pressure upon the lungs. I think there are several other means of treatment equally as good as prairie grass or hay; one is corn stalk fodder. My reason is founded on this basis, that it is by saccharine matter that most animals subsist, and the less compass occupied in the bowels the better. One quart of oats is equal to an armful of hay, and three pounds of corn leaves contain more sugar than six times the bulk of timothy hay. It will be seen, then, that the cause, treatment, and cure are marked in these few words; that is, that heaves are produced by pressure upon the diaphragm by too much food in the stomach and bowels, and is cured by lessening the quantity of food to occupy the same space. After the horse is turned out to grass a few days, the heaves will usually disappear, from the fact that the bowels are generally relaxed by exercise and pure air. The only treatment which will prove to any degree effective, is to give one of the following remedies:—

½ ounce powdered ginger.
¼ ounce capsicum.

Form into a ball and give three nights in succession; then omit two or three nights, and give again three nights in succession.

"Or—

8 or 10 drops tincture of phosphorus.

Give in the drink several times a day for eight or ten days.

"The horse should have regular exercise, and be watered often with a small quantity at a time, and have straw instead of hay to eat. Under this treatment heaves will disappear."*

Prof. Law, in his *Veterinary Adviser*, says:—

"Overfeeding on clover hay, sainfoin, lucern, and allied plants; on chaff, cut straw, and other bulky and innutritious food, is the main cause for heaves. In Arabia, in Spain, and in California,

* The foregoing is a synopsis of Dr. Somerville's lecture to the writer on "Heaves."

where there is no long winter feeding on hay, and in our Territories where clover is not used, heaves is a disease that is virtually unknown; it has advanced westward just in proportion as clover hay has been introduced as a general fodder for horses, and it has disappeared in England and New England in proportion as the soil has become clover sick, and as other aliment had to be supplied. The worst conditions exist when a horse is left in the stable for days and weeks, eating clover hay, or even imperfectly cured, dusty hay of other kinds, to the extent of thirty pounds and upward daily, and then is suddenly taken out and driven at a rapid rate. Violent exertions of any kind, and diseases of the lungs, are also potent causes. It is mainly a disease of old horses, but may attack a colt two years old. Finally, horses with small chests are most liable, and thus the disease proves hereditary.

"*Treatment.*—Turning out on natural pastures, feeding cornstalks and other laxative food, will relieve, and even cure, mild and recent cases. Feeding on dry grain, with carrots, turnips, beets, or potatoes, and a very limited supply of water, will enable many broken-winded horses to do a fair amount of work in comfort. Hay should never be allowed except at night, and then only a handful clean and sweet.

"The bowels must be kept easy by laxatives, the stables well aired, and sedatives (digitalis, opium, belladonna, hyoscynamus, stramonium, lobelia) used to relieve the oppression. If a white discharge from the nose co-exists, tonics should be given as for chronic bronchitis, to which wild cherry bark may be added. Tar water as an exclusive drink may be given, and a course of carminatives (ginger, caraway, cardamous, fennel) may be added with advantage. But nerve tonics, and above all arsenic in five-grain doses daily, and continued daily for a month or two, are especially valuable.

"No broken-winded horse should have food or water for from one to two hours before going to work."

The usual method of treatment adopted by "jockeys," is to feed the horse on cut rye straw, to feed very little hay, and to feed all aliments dampened. Rye straw is cut as you would cut hay, then mixed with bran or middlings, into which a handful of salt is added, and dampened with water. This is fed every night. Oats and other grain is always dampened. Draught horses fed in this way seldom show any sign of heaves.

Prof. Law regards the following as the best preparation for heaves:—

1 ounce arsenic,—Fowler's solution.
1 drachm belladonna extract.
½ drachm tincture of ginger.

Mix with a pint of water for a drench and give every morning for a month or two.

A favorite remedy for heaves, used by Prof. Dick, principal of Edinburgh College, and undoubtedly of great value, is :—

Camphor.
Digitalis.
Opium.
Calomel. Of each, 30 grains.

Make into one powder or ball, and give once a day for a week. If no improvement is noticeable, omit the calomel, and give for a week or two longer.

2 ounces Spanish brown.
2 ounces tartar emetic.
4 ounces resin.
2 ounces ginger.

Mix and give two teaspoonfuls twice a day in the feed.

½ ounce vegetable tar, in mass.
½ ounce gum camphor.
1 drachm tartar emetic.

Form into a ball, one of which is to be given once a day.

1 ounce indigo.
1 ounce saltpetre.
1 gallon rain-water.

Mix and give a pint twice a day in the feed.

Roaring.

This is a very annoying difficulty, for which there is no satisfactory treatment. Like chronic cough, it often follows an attack of laryngitis or of distemper (strangles), and in these cases we believe it is owing to a wasting (atrophy) of the muscles of the head of the windpipe (larynx), whereby its calibre is diminished, and when the air rushes in during violent exertion, a roaring sound is produced. The senseless and cruel method of tight-checking, in addition to the throat latch being often buckled so tightly as to obstruct the breathing, is also a very common exciting cause.

Symptoms.—When the horse is not excited, and so long as the air passes in a uniform rate through the larynx and windpipe, the animal does not feel any inconvenience ; whenever he is excited or galloped, causing a rush of air, the roaring noise is produced. The sound in ordinary circumstances is only produced on inspiration, but in very severe cases the sound is audible both on inspiration and expiration.

In some horses, roaring is difficult of detection. There are several tests which can be resorted to with the view of detecting it. It may often be readily detected by taking the horse firmly by the head and striking him suddenly on the side, causing him to start forward ; if a grunting noise is emitted, it is always a suspicious circumstance. But the better test would be to gallop the horse sharply for some distance, then pull him up quickly, and by applying the ear to the nostrils or to the windpipe, any abnormal sound will at once be noticed. A good test in the case of draught horses is to compel them to draw a heavy load.

Treatment must be principally palliative ; much can be done by generous and regular feeding, and never allowing the animal to overload his stomach and bowels. Occasional doses of laxative and sedative medicines tend to relieve the more distressing symptoms.

In the early stages, continued applications of tincture of iodine is beneficial when applied to the throat. With this the following mixture must be used internally :—

4 ounces powdered prickly ash bark.
3 ounces powdered belladonna leaves.
6 ounces powdered licorice root.

Mix the above with molasses into a soft mass, and give a piece as large as a black walnut on the back of the tongue, with a flat stick, twice a day. This must be continued for at least one week, after which give the remedy once a day for two weeks.

Have the hay well dusted, and moisten all feed given the patient. The above treatment will always cure, or give relief, providing the disease is not too far advanced.

Great relief is sometimes experienced by putting a seton on each side of the neck for some time. Sharp blistering may also be tried, but is not nearly so effective as setoning.

The following treatment for the cure of roaring, or whistling, as it is termed, has been used by Mr. E. D. Conklin and others in Cleveland, Ohio, and they claim the most satisfactory results. Mr. Conklin, who is a large owner of horses, and perfectly reliable, states that he cured one very bad case ; could not pull a load two rods up hill without blowing and choking down ; was completely cured in six weeks. Has tried it in a number of cases, and always with satisfactory results. The treatment was introduced by Dr.

Johnson, of Cleveland, who claims he can cure any case. As there is no really satisfactory treatment for this difficulty in regular practice that I know of, I give this remedy and state my authority. It can be tried with safety.

1 ounce Fowler's solution.
20 drops sulphuric acid.

Give the horse in the evening 30 drops of the mixture in about a wine-glass of water, on the tongue. Spongia Tosta, first dilution (a homeopathic remedy), 10 drops in the morning, to be repeated alternately for from four to six weeks, giving more or less, and for a longer or shorter time, according to the severity of the case, until a cure is effected.

Dr. Johnson also found that when the horse is choking with severe inflammation of the throat, called distemper, diphtheria, etc., that giving successively spongia, aconite, and belladonna, after intervals of fifteen minutes, and repeating, is very effective. This prescription was given the writer by Dr. Johnson. Since then Mr. Conklin, in conversation with the writer, stated that in relieving heaves he found it of decided value. Filling a sponge with the spongia preparation, and squeezing it into the nostrils and mouth a few times will give relief. He regarded it very effective and valuable for this purpose.

Bronchocele.

Bronchocele, or morbid "enlargement of the thyroid gland or body." These are two small glands situated one on each side of the windpipe (trachea), about three inches from the head of the windpipe (larynx) ; they are ductless glands, having no excretory duct, and they are largely supplied with blood-vessels and nerves.

Stallions seem to be the most affected by this. It is a tumor usually on one side of the windpipe, and the character of the swelling varies according to its duration. It may be soft or firm, and it may affect the whole gland, or only one side of it ; the tumor seldom causes pain, and the animal appears not inconvenienced by it, although very large. The tumor varies in size from that of a hickory nut to as large as a man's hand. It has been regarded by some as a cause of roaring, but it is evident that it has nothing to do with that difficulty.

Treatment.—Iodine and its compounds seem to have the best effect in removing this enlargement. One part of iodine to six or

seven of lard, to be applied daily ; and at the same time administer twice a day in solution 1 drachm of iodide of potassium.

Nasal Gleet

Is the name applied to a chronic glairy discharge from one or both nostrils, of a whitish muco-purulent matter, the result usually of neglected catarrh. The general health of the animal does not seem to suffer ; he looks well, feeds well, and works well.

Nasal gleet is not an uncommon disease, and many horses have been destroyed, supposed to be affected with glanders, when in reality they were only suffering from nasal gleet. It is on this account that I have been so explicit in describing glanders.

Causes.—It is very often the result of catarrh in a chronic form, as stated, induced by further exposure to cold, and want of a proper supply of nutritive food. It may also occur in cases where it cannot be traced to a catarrhal attack of the air passages ; and it occurs oftener in aged than in young animals.

Symptoms.—The first noticeable symptom is a yellowish discharge from one or both nostrils. The lining membrane of the nose (schneiderian) is altered in color ; it becomes of a pale leaden hue, but does not exhibit ulcerative patches, as in glanders. The discharge may vary both in quantity and quality. It is often retained for some time within the sinuses, and comes away in considerable quantities. In other cases the discharge is continuous, and collects about the nostrils ; the sub-maxillary gland, in cases of long standing, becomes tumefied, but not adhering to the bone as in glanders ; the frontal and nasal bones are affected, and present an enlargment or bulging out over the seat of the disease. If tapped with the point of the finger, a dull, heavy sound is produced, showing that matter has collected within the sinus. In ordinary cases it is a long time before it materially affects the horse in his working capacity. When the bones are greatly diseased, and the matter collects within the nasal sinuses, it interferes with respiration, causing laborious breathing.

Treatment.—Although a formidable disease, even the worst of cases may recover if properly treated. The successful treatment in all cases where this disorder has existed, has been on the tonic principle. Bleeding and purging are positively injurious. Give

good food and moderate exercise, sponge the nostrils with tepid water, or steam the head, as described for catarrh, once or twice a day, and administer mineral or vegetable tonics, as—

3 ounces sulphate of copper.
1 ounce powdered gentian.

Make into twelve powders, and give one in the food morning and night; or, the sulphate of iron in two-drachm doses twice a day.

The nasal cavities may be injected with a weak solution of sulphate of zinc or of alum ; or of sulphate of copper, about five grains to an ounce of water. When the bone is diseased, and matter collected within the sinuses, it is necessary to trephine the bone. After operating, inject the sinus with tepid water twice or thrice a day, followed by injecting any of the astringents already recommended. The opened sinus sometimes fills up with a fungus growth, which must either be removed by the knife or by means of caustics.

I include here treatment reported in the *Journal of Comparative Medicine and Surgery* for January, 1883, by John Lindsay, D. V. S., of Huntington, Long Island, which has been so effective that I think it worth while to copy his report in full :—

"July 5th, 1881, I was called to examine a horse at Clay Pits, Long Island. This animal was supposed to be suffering from glanders. As he was a valuable work horse, the owner did not wish to destroy him without my advice.

"The horse was a bad case to look at. He was discharging very offensive matter from both nostrils, which had the odor of pus coming from a necrosed bone. The horse was much reduced in flesh and very weak. On examination I found him to be suffering from nasal catarrh, and on my stating this to the owner, he wished me to try to cure him. The disease was of three years' standing. At first I thought of trepanning, but having no instrument, I concluded to try injecting the nostrils, knowing from experience that if I could reach the necrosed bones with my solution I could make a cure.

"Mixing up one ounce of Calvert's crystallized carbolic acid No. 2, to one pint of water, I injected two ounces into each nostril twice daily. After three days of this treatment, there was a marked improvement, which after this was less pronounced, but there was a gradual and steady change for the better. At the end of two weeks the animal had improved much in general health, and at the end of four months was entirely cured, and there has been no return of the trouble up to date.

"July 24th, 1882, I was called to see a horse suffering from a very offensive discharge from his nostrils of one year's duration. At

times there was a marked subsidence of the discharge, followed by acute exacerbations. When I saw the case, it was in one of the acute attacks. Upon examination, I diagnosticated nasal catarrh.

"I ordered the same treatment as used in the above case, and in two months a cure was effected, with no recurrence.

"August 10th, 1882, I was called to see a horse which could not breathe easily, and the owner feared the animal was developing heaves. The breathing was labored, and there was marked evidence of obstruction in the nasal passages. There was not, however, the double action of the flanks commonly observed in horses. Upon inquiring, I found that two months previous to my visit the horse had suffered with a severe discharge from the nostrils, which had since ceased. But two weeks after the nasal discharge stopped, he had trouble in breathing.

"I came to the conclusion that the horse had been afflicted with chronic nasal catarrh, and that the turbinated bones were plugged with thick pus. He was placed under the same treatment as the other two cases, and in three days began sneezing, and blew from his nose two large masses of thick and cheesy pus, followed by a return of the discharge.

"The continued use of the injections, however, terminated in a complete cure of the case in one month."

Influenza—Epizootic—Catarrhal Fever, or Pink-Eye.

This disease has been so common since 1871, and it has caused such serious losses, that it may well be regarded with great apprehension by owners. On this account I have been induced to make a special effort to obtain the most reliable and practical treatment for its successful management. So much depends, in the treatment of this disease, upon good conditions of care and nursing, that is, careful housing, keeping up the strength, etc., which in the country must be mainly dependent upon the owner, and it is so easy to cause the loss of a case by a little carelessness or bad treatment, that it is especially important to give such details as will enable a successful treatment of this disease. To accomplish this, I not only give the very best explanation of the difficulty and treatment directed by one of the most prominent veterinary surgeons of the country, but the treatment practiced by Dr. Meyer, who informed the writer that he had treated thousands of cases without losing a single one, complications excepted; that of true pink-eye he never lost a case, and consequently must be accepted as entirely reliable and of great value.

Influenza, etc., belongs to the class of diseases called epizootic, which are distinguished by extending over a large tract of coun-

try, and attacking a number of horses at the same time. In its nature it resembles an epidemic form of catarrh, but it is essentially different, and is easily distinguished from that complaint by its epizootic character, and the marked prostration, and low typhoid form of fever which always accompanies it. It does not affect horses alike in all seasons; some years it is apt to involve the lungs principally, with a marked tendency to dropsical effusion, whereas in others the liver and digestive organs are chiefly implicated.

Causes.—It is usually supposed to arise from "atmospheric causes,"—some changes which are said to exist in the atmosphere which are not easily explained. It occurs mostly in spring or autumn, and is most commonly seen in over-crowded, badly-ventilated stables, situated in malarial districts. City horses are more liable to it than those in the country, and coarser breeds are more subject to it than the finer breeds. Poor and over-worked horses are especially subject to the fever.

The disease at times comes on as an epizootic. While it is considered decidedly contagious, many veterinarians claim no infection. Dr. Meyer informed the writer that while the fever was at its height, in one stable where the sanitary conditions were excellent, and containing one hundred and seventy horses, not an animal was taken with the fever; while in badly ventilated stables, and under poor conditions, the disease was rampant.

This is not, however, fully in harmony with the writer's experience. In 1871, when the fever was very prevalent in the East, to avoid the disease he shipped his horses from Central New York to Mansfield, Ohio. The horses were all in perfect health, and the conditions of care and stabling were the very best possible; yet when the epizootic reached the town, the first day there were reported in different parts of the place fully fifty horses that were taken with the disease. The writer's horses, five in number, were all taken the same day; one or two of them but slightly, two of them very severely.

Country people, with the hope of avoiding the disease, would hitch their horses about a mile outside the city limits; but it was soon found this made no difference, as horses running in the fields seemed to be equally subject to it, though not, as a rule, very severely. One farmer who left his horse as stated, far beyond the

city limits, when he returned home found three of his horses that were running in the pasture, taken with the fever ; but experience proved that animals subjected to good conditions and care, had it most lightly and made the best recovery.

Symptoms.—It is early characterized by weakness, a quick, weak pulse, hot mouth, shivering, dullness, watery eyes. The lining membrane of the nose is reddened, accompanied by a watery discharge which soon becomes thick and purulent, accompanied by sore throat and difficulty of swallowing ; the appetite is impaired, and the bowels costive. These symptoms, instead of abating, as in catarrh, increase, the breathing becomes hurried, and there is lifting of the flanks. The low form of fever is characteristic, as also its occurring in spring or fall, and attacking a number of animals in the same way, distinguish it from common catarrh.

In some seasons the lungs are primarily affected, and there is great weakness, with a tendency to dropsical effusion ; water accumulates in the chest ; the heart and its coverings are seriously involved ; often the eyelids, lips, and whole head are greatly distended with fluid. In other cases the liver and bowels seem to suffer most, causing great thirst, general uneasiness, costive bowels, and light-colored feces, sometimes covered by slimy mucus, and rapid prostration. "When unfavorable termination occurs, the dullness increases to stupor, the extremities get colder, the breathing more difficult and abdominal, the pulse quicker, weaker, and more irregular, until death supervenes."

Pink-Eye.

Symptoms as given by Dr. Meyer.—"The symptoms are shown in a staggering gait, hanging head, trembling, shivering as from cold, loss of appetite ; watery discharge from the eyes, one eye closed, especially the left one. The pulse is quickened and weak, from 50 to 60 in the minute, and the breathing is hurried, temperature 104° to 106°. The bowels are bound and the urine scanty. The disease is often complicated with bronchitis, pneumonia, pleurisy, etc., etc. A pinkish color of the mucous membrane of the eye-lids is always present in this disease. There is a discharge from the nostrils, swelling of the limbs, which are tender to the touch. The animal is weak, lying down most of the time. The body seems to be hot all over. The head hangs low, and in fact seems to be suffering from pneumonia. The only difference between pink-eye and pneumonia is, that in the former the pink eye is noticeable, and the horse lies down, while in the latter he does not."

Treatment.—The general principles laid down for the treatment of common catarrh, are applicable to the treatment of influenza ; bleeding, purging, or any method of treatment that would tend to diminish the strength, must be avoided, as the debilitating tendency is great from the first. He should be placed in a loose-box, the body clothed, and the legs bandaged. If noticed while the shivering fit lasts, one or two ounces of acetate of ammonia may be given with advantage. The bowels should be gently opened by a pint of castor oil and one or two drachms of calomel, supplemented by injections of soap and water. When the rigor has passed off, and the fever runs high, the fever medicine should be given in doses of fifteen to thirty drops, every hour and a half, or tincture of aconite in doses of about ten or twelve drops, may be given. He should be encouraged to drink water holding small doses of nitre in solution ; should he not drink it, he may have a few mouthfuls of water every hour or two, which of itself is excellent for reducing fever. He should have green food when procurable, or a little boiled oats, and bran mash, or anything else he will eat. When the throat is very sore, and the cough troublesome, rub on the throat a counter-irritant as directed for sore throat, and give the following ball night and morning :—

1 drachm camphor,
1 drachm opium,
2 drachms nitrate of potash.

Make into a ball with linseed meal and molasses.

Should the lungs or bronchial tubes become involved, indicated by the heaving flanks and careful breathing, use counter-irritants of mustard or good strong liniment, or hot fomentations to the sides until there is relief, as directed for pneumonia. From the first, tonic treatment will be found beneficial in counteracting the debilitating tendency of the disease.

When all inflammatory symptoms have disappeared, tonics will greatly aid the recovery.

Dr. Meyer's Treatment.—" Good nursing is indispensable ; should be well blanketed, and fed on anything the patient chooses to eat ; good air, and the stable should be purified by throwing air-slacked lime in the stalls, etc.; and from the first, begin by giving the following remedies every eight hours :—

1 ounce carbonate of ammonia,
2 ounces cinchona bark, powdered,
½ ounce nux vomica, "
2 drachms digitalis leaves, "
3 ounces gentian root, "

Mix and make into eight balls.

"Give as much water as the patient chooses to drink, to which add some saltpetre. About two ounces a day should be used. The above balls should be used after the second day by giving one morning and night; when feeding is resumed, discontinue the remedies, and continue with good nursing. Cure in six to eight days. Bathe with hot salt and water."

It is also necessary to exercise quite slowly at first, as a very little over-doing or exposure is liable to bring on a relapse, which is almost sure to be fatal.

Congestion of the Lungs, Pleurisy, Inflammation of the Lungs.

It is explained in the article on Circulation (page 732), that when a horse is exposed to cold, or to conditions which derange the circulation, such as changes of temperature, especially after severe exertion or exhaustion, standing in a current of cold air, etc., by forcing the blood from the surface of the body to the internal organs, it will in most cases go to the lungs and surrounding parts, when it would be termed pleurisy, pneumonia, or congestion of the lungs, with possible complications with other parts.

This is so common and fatal in its effect, if neglected or not treated properly, that it is very important to have the nature and treatment made so simple and plain to owners and stable-keepers that, in the absence of competent professional aid, they may easily understand and combat it successfully during its insipiency, when it can as a general thing be easily managed.

We will first briefly consider the structures involved in pulmonary affections. The windpipe (trachea), after entering the chest, divides into the bronchia or bronchial tubes. These divide and subdivide into smaller tubes, finally terminating in the air cells. The lungs are made up of clusters of those cells; of a large mass of pulmonary texture called the parenchymatous structure or substance of the lungs; of blood-vessels, both functional and for the nutrition of the organ; of nerves and lymphatics; and

the whole inclosed in a serous membrane called the pleura, which is made up of two portions, one portion being reflected over the lungs (pleura pulmonalis), while the other lines the inside of the ribs and diaphragm (pleura costalis). The lungs are exceedingly light in proportion to their size, and are very vascular organs; consequently they are very liable to diseases of an inflammatory character, and the precursor of inflammation is congestion. A good idea of the circulation in these parts can be obtained by a

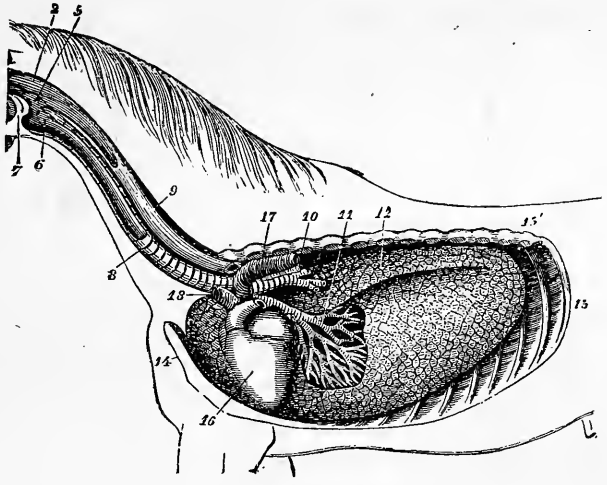


FIG. 764.—Showing the respiratory organs.

8. Trachea; 9. Esophagus; 10. Section of left bronchus; 11. Ramifications of right bronchus; 12. Right lung; 13. Left lung seen from above; 14. Sternum: 16. Heart; 17. Posterior aorta; 18. Anterior aorta.

study of Figs. 622–627 in Circulation, on pages 733–737, and the other cuts included there.

Bronchitis is inflammation of the lining membrane of the tubes of the lungs and lung cells, which is considered in another part of this work; but as it is frequently connected with lung difficulties, I refer to it again in this connection.

Pleurisy is inflammation of the pleura, before referred to (or serous membrane which covers the lungs and thoracic cavity).

Pneumonia is an inflammation of the lung tissues, or parenchyma of the lungs. If we had bronchial-pneumonia, we would have an inflammation of the lining membrane of the tubes and

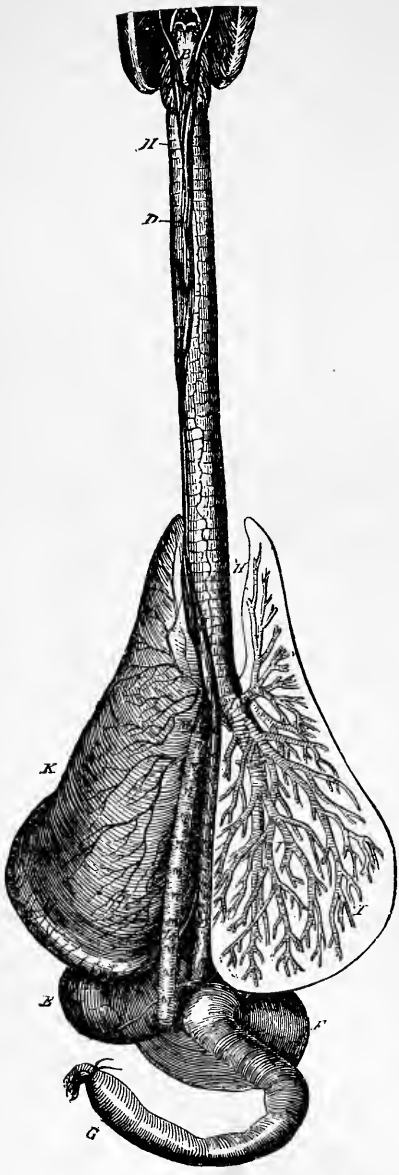


FIG. 765.—Trachia and bronchial tubes.

H, Trachia; I, Ramifications of bronchial tubes; L, Chobaic artery.

the parenchyma of the lungs; if we had pleuro-pneumonia, we would have an inflammation of the pleura, or membrane, and the parenchyma or tissues of the lungs.

Congestion of the lungs consists in an increased determination of blood to the capillaries of the air-cells. When one or the other (right or left) lobe of the lungs is so engorged with blood forced into them, that they are unable to either receive or discharge blood in proper quantities, thereby interfering materially with the process of respiration; and consequently, if allowed to go too far, it will cause direct suffocation and death. It may exist as an independent disease, or accompany other affections of the chest. The distinguishing symptoms of each, with treatment, will be given farther on. In order to simplify the treatment, I refer next to the nature and effect of inflammation.

It is first an increased action of the blood-vessels. The consequence is an increased amount of blood to the part. The next change to take place is a collapsed condition of the walls of the vessels. Now there follows an enlargement of the blood-vessels; then the

blood passes the walls of the vessels through the tissues outside of the vessels. The next change is the breaking down of the cellular tissues—normal cells ; next a rapid growth or proliferation of abnormal cells. To go through symptoms : If an external injury, for example, there would be, first, pain caused by the pressure upon the nerves. The heat following would be caused by the chemical changes that are going on within the part. The redness

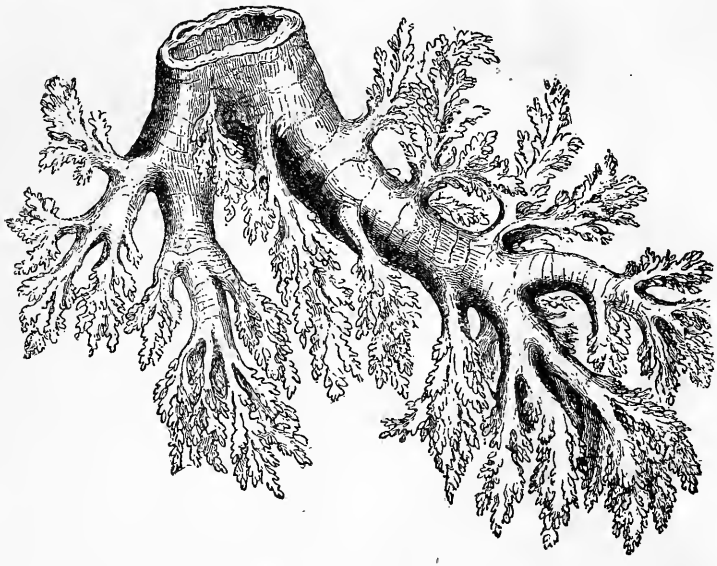


FIG. 766.—Bronchial tube, with its bronchules, and ultimate ramifications (natural size).

is due to the passing of the blood from the vessels into the tissues; the swelling is due to the breaking down of normal cells and the rapid formation of abnormal cells. The object in all cases, whether internally or externally, is to equalize the circulation as quickly as possible.

There are two methods of treatment : If we know the cause, as, for example, the animal having stood in a draught of air or been exposed to cold, chilling weather, alcoholic stimulants would be the best treatment, not only giving alcohol internally, but rubbing it on the legs, and cover the body with warm blankets. Rub elbows and hocks to feet, by hand-rubbing or brushes, rubbing quickly, and cover with warm flannels. If not successful, or if

inflammation, before explained, sets in, there will now be a rapid rise in temperature, when there may be a strong stanic pulse ; in that case sedatives would be required. Tincture of aconite has stood the test for years. About ten drops Fleming's tincture four or five times a day, with from an ounce to an ounce and a half of nitrate of potass divided into two powders and given one in the morning and one at night, or the fever medicine, hereafter given, can be used.

FIG. 767.—Air-cells of lung, with intervening tissue.

a, Epithelium; *b*, elastic trabeculæ; *c*, membranous wall, with fine elastic fibers.

In the early stage, external means of irritation can be freely used with good results, but are not admissible when the disease has thoroughly set in, as they only aggravate the trouble. If the pulse is weak, stimulants are required, such as carbonate of ammonia, 2 drachms ; camphor, pulverized, 1 drachm ; and nitrate of potass (as before). Give in one dose three times a day—the potass to be given in water separately.—*Walton*. (See also article on Pulse.)

The termination of inflammation will be either in resolution—that is, a clearing of the lungs, what is known as a gray heppatized state—or in a breaking down of lung tissue, which may develop into an abcess, or tubercles, or gangrene, or death of the lung tissues.

If the horse is young, and strong, and vigorous, not as much stimulant should be used as for an old horse.

If ammonia arises from bedding in stable, it should be neutral-

ized by sprinkling on a little chloride of lime ; too much of it would have an aggravating effect upon the mucous membrane.

Congestion of the Lungs.

Symptoms.—It is first noticeable by the horse having a severe chill or shivering fit. He refuses his food, hangs his head between the fore legs or upon the manger, will not move or lie down, breathing quick, panting like. The nostrils are expanded, the head thrown forward ; the countenance expresses pain and great prostration. (See cut.) The pulse is sometimes full and quick,

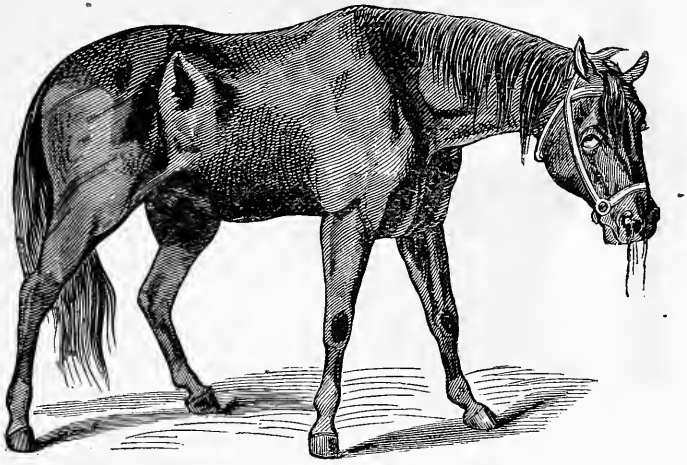


Fig. 768.—Horse with congestion of the lungs.

but generally quick and weak, scarcely perceptible ; the membrane of the nose and eyes bright red, tending to purple ; ears and legs are very cold, with a cold, clammy sweat at the extremities.

When occurring after a hard ride or drive, the horse will become tired and sluggish in his action ; he will perspire profusely, and almost refuse to proceed, except with the greatest difficulty ; he will stand with his elbows turned outward, heaving violently at the flanks ; as before explained, the nostrils are dilated, and the ears and extremities cold ; the pulse is oppressed, or almost imperceptible at the jaw ; the mucous membranes of the nose and eyes are reddened. When of a milder nature, as often occurs in horses suffering from catarrh which have been subjected to a fast drive and exposed to cold draughts, he is seized with a trembling

fit; the ears are cold, and the respiration hurried, when the ear applied to the chest can plainly detect the imperfect breathing.

The inability of the horse to take sufficient air into the lungs, causes great and rapid prostration, and the horse will often, from extreme pain, lie down and get up, resembling colic (*Somerville*); but the coldness of extremities, prostration, and condition of pulse, will, if carefully examined, enable an understanding of the real cause. A choking noise is sometimes heard coming from the throat. In some cases a little blood may be thrown from one or both nostrils. Extreme prostration and laborious breathing, and bleeding from the nostrils, show a condition of severe congestion.

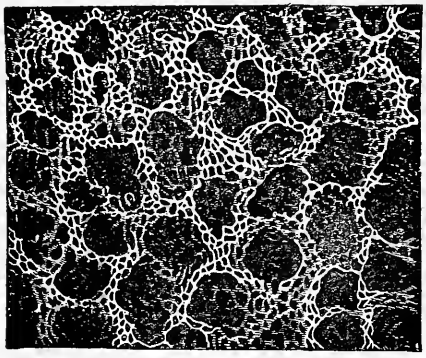


FIG. 769.—Arrangement of the capillaries around the air-cells.

Causes.—The most common cause is violent exertion when the horse is in an unfit state for severe work; as, for instance, a horse in high condition is taken out of his stable and driven rapidly for five or six miles; this induces an increased quantity of blood to the lungs, more than they can dispose of in their weakened condition from the want of regular exercise. It is also caused by impure air, in horses standing in crowded stables, and is often a sequel of catarrh.

Treatment.—In acute cases it must be energetic. Clothe the body well, and administer stimulants, as—

2 ounces sulphuric ether,
1 ounce laudanum.

To be given in half a pint of cold water; or nitrous ether may be given in place of the sulphuric.

If no medicinal agents can be conveniently procured, give a quart of warm ale, or a tumblerful of gin, whisky, or brandy, mixed up with hot water or sugar. Have him put into a warm place, with plenty of ventilation, as pure air is an indispensable adjunct in the treatment of all pulmonary diseases. If no relief

follows, and there is danger of suffocation, take from four to six quarts of blood from the neck vein, rub alcohol or other stimulant on the legs, rubbing well with the hand, and apply hot cloths to the sides and loins, and cover up with dry blankets, so as to induce a free perspiration, and thereby assist in relieving the lungs.

There is some difference of opinion among practitioners in relation to bleeding for congestion. Dr. Summerville, who is a very able and successful practitioner, instructed the writer as follows: "If there is much congestion, it is necessary to give prompt relief, which can be done best by taking four to six quarts of blood quickly from the neck vein, stimulate the sides and legs, and give fever medicine as for pleurisy." While he condemns bleeding for pleurisy or inflammation of the lungs, he says, "In a severe attack of congestion, bleeding cannot only be resorted to with safety, but, as above stated, is indispensable; but must not be carried too far, merely to assist the lungs to throw off the load of blood forced upon them, and to give the medicine prescribed a chance to operate." Prof. Williams also advises the same treatment. While he condemns bleeding as a general rule, he advises, where congestion is so great as to endanger asphyxia, bleeding a little (from four to six quarts), promptly.

Pneumonia—Inflammation of the Lungs,

As before explained, is inflammation of the substance of the lungs.

Causes.—It is often a sequel of neglected or improperly treated catarrh. It may also, as stated, be accompanied by pleurisy. A frequent and we may say the most common cause, is exposing the horse while warm to a sudden change of temperature, by allowing him to stand in a cold draught of air, etc.; getting chilled or wet; washing the belly and legs immediately after exercise and allowing the horse to get chilled; removing from a warm to a cold or from a cold to a warm stable, or cold applied to the surface of a heated animal, by which the blood is driven from the skin and extremities to the internal organs. Any slight cold or sore throat may run into pneumonia. Driving rapidly against a cold wind, especially after being confined to the stable for some time, is a common cause, and a horse should be watched carefully after such

an exposure; also breathing impure air in overcrowded, badly ventilated stables, or standing in an open, draughty stable.

"Any exposure to cold and wet, sudden chills, housing in very cold, draughty stables. Horses kept in ill-ventilated stables are undoubtedly rendered susceptible to many diseases, and to pneumonia among the rest; but they will bear impure air even better than cold draughts blowing directly upon them. I have repeatedly observed that the slightest cold contracted by a horse kept in a draughty stable has almost invariably been succeeded by pneumonia, and that if the animal was not removed to a more comfortable situation, the disease tended to a fatal termination."—*Williams*

Symptoms.—Pneumonia is almost invariably ushered in by shivering, and coldness of the surface of the body. The breathing becomes hard and full, panting like. The pulse is full and oppressed, running up to from sixty to eighty beats per minute, differing in its character from the pulse of pleurisy, which is hard and wiry. The ears and legs are cold; the membranes of the eyes and nose are reddened; the animal stands persistently with his elbows turned out, to give more freedom to the lungs. He stands with his nose toward the window or door, where he can get fresh air.

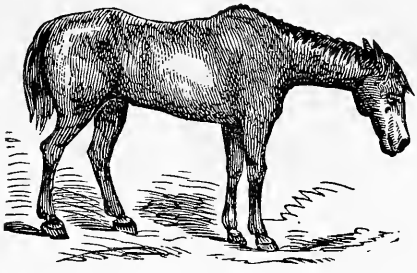


FIG. 770.—As the horse usually stands when suffering from inflammation of the lungs.—*From Mayhew.*

A healthy horse breathes at an average of ten times in a minute, viz., ten inspirations and ten expirations; and the time occupied by the inspiratory movement is longer than the expiratory. In pneumonia the expiration is as long, if not longer, than the inspiration, and these movements are very much quickened, being an effort of nature to compensate for the impaired action of the lungs. When a cough is present, it is freer and less painful than the cough of pleurisy. By applying the ear to the sides of the chest, in the early stage a crepitating sound is heard, which becomes altered as the disease progresses; but in a general sense it is easily distinguished by the horse standing with the legs spread, the head thrown forward, breathing quick and hard, and ears and legs cold.

Treatment.—Blanket warmly and put in a comfortable stall where there will be pure air, and give the following fever medicine :—

1 ounce tincture of aconite,
2 drachms tincture of belladonna,
3 ounces water.

Of this give from 15 to 30 drops on the tongue every 20 or 30 minutes, or about 10 drops tincture of aconite every two hours, more or less, according to the severity of the case. If the case is severe, apply strong stimulants to the legs, breast, and sides of the chest, as before explained, such as mustard made into a paste and rubbed in thoroughly, or a liniment composed of aqua ammonia reduced one-half with water, and rubbed in well so as to invite circulation to surface and extremities.

Blankets wrung out of hot water applied to the sides in the early stage (for details see Fomentations), is preferred by many. If this is done at the time the fever sets in, either in pneumonia or pleurisy (the treatment for which is practically the same), with a few doses of the fever medicine, it is rarely the horse will not be relieved next day; but if not, recovery will not commonly take place before the fifth or sixth day. Give from 2 to 3 drachms nitrate of potass two or three times a day. When there is improvement, which will be denoted by the pulse becoming full and regular and the expression and actions being lively, give less fever medicine and at longer intervals. Should too much be given, it will be noticed by falling of the pulse, sweating, trembling, and anxious eye, when it should be discontinued, and stimulants would be indicated.

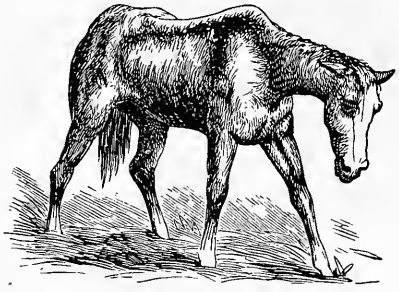


Fig 771.—Horse in last stages of inflammation of the lungs.—*Mayhew.*

Nurse by giving simple food, such as a little bran with boiled oats, linseed meal, cooked carrots, with a little good hay. If there is much weakness, give moderate doses of whisky or brandy, from 4 to 6 ounces two or three times a day, being governed by its effects. If the bowels are bound, move them by enemas. Recovery will be greatly aided by the use of stimulants and tonics;

liquor acetate of ammonia in 2 ounce doses three or four times a day, may be used.

The best veterinary surgeons now all agree that bleeding is not only unnecessary but injurious in treating pneumonia and pleurisy.

Pleurisy.

As before stated, pleurisy is inflammation of the pleura.

Symptoms.—It may be sudden or gradual in its attack, the horse showing indisposition, sometimes for days previous. He will be dull and heavy in action for a day or two, unwilling to lie down, pulse not much disturbed, or there is a chill, or shivering fit, which lasts from one to three hours, when fever sets in; breathing at flanks a little accelerated, countenance is anxious, the head is sometimes turned toward the side, does not lie down. As the disease advances, the symptoms become more marked. The ears and legs become cold; the pulse, from being a little accelerated, grows quicker, hard, and full; the head is hung forward; stands up persistently; breathing hurried; the membrane of the nose and eyes red.

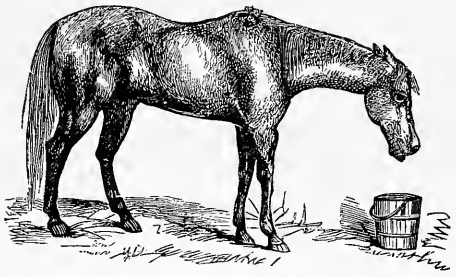


Fig. 772.—Usual appearance of a horse suffering from pleurisy.—*From Mayhew.*

Turning the horse round, or hitting against the chest, back of the shoulder, will cause a kind of grunt.

The ear applied to the chest will detect a rough, rasping noise, and there is generally present a short, painful, suppressed cough, easily excited by pressure on the larynx.

Causes.—Are similar to those of pneumonia, such as variations in temperature, exposure to cold while warm, standing in draught of cold air, impure air, etc. Pleurisy occurs as an independent disease, or, as before stated, may be accompanied by inflammation of the lungs. If neglected or not treated properly, is a very dangerous disease.

Treatment is practically the same as for pneumonia. Put in a cool, well-ventilated stall; give fever medicine; blanket the body, neck, and legs warmly; if at all serious, using stimulants on the extremities, and hand-rubbing thoroughly, with hot fomentations to the sides; the general treatment, in a word, is the same as for pneumonia. Should there be cough, or soreness of the throat, it is to be treated in connection, as directed for laryngitis.

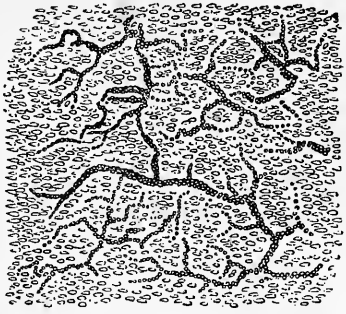


FIG. 773.—The pleura as it appears when inflamed, magnified.

I wish now to call attention to what must not be done. First, give no physic nor oil for any form of inflammation of the lungs. Cathartic medicine is poisonous, such as aloes, oils, or tartar emetic. There is so much nausea during the operation of these medicines, and debility from their effect, that they do harm. There is such great sympathy between the bowels and the lungs, that they hasten the cause of inflammation of the lungs, often causing death within a few hours after administering them. Next, do not bleed for pleurisy, as so doing will cause debility of the capillaries of the part, which would induce hydrothorax, or dropsy of the chest.

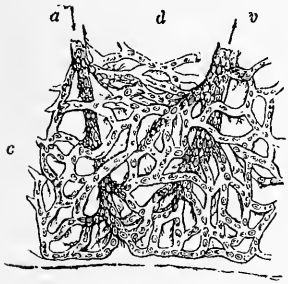


FIG. 774.—Section of pleura showing blood-vessels greatly injected with blood.

This will be somewhat puzzling to owners and stable-keepers, and especially to those who may be guided by Youatt and other good old authorities who invariably advised this treatment.

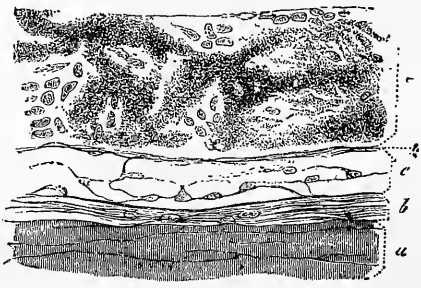


FIG. 775.—Showing adhesive inflammation of the pleura.

The better to aid my readers, I include also the directions

given by Prof. W. W. Williams, president of the new Veterinary College of Edinburgh, Scotland, who is now recognized as being at the very head of the veterinary profession, and the most reliable authority:—

"1. Place the animal in a well-ventilated loose-box, but where the air is not too cold.

"2. Clothe and wrap the body, extremities, and head in suitable but not too heavy cloths.

"3. Give it as much water as it will drink, adding to the water, if there is much fever, about an ounce of nitre, or 20 to 30 drops of tincture of aconite, to the bucket full.

"4. If the bowels are bound, loosen them by injections of oil or warm water.

"5. If there is much weakness, give two drachms each of carbonate of ammonia and camphor, in the form of a ball, twice daily.

"6. Let the food be simple, laxative, cooling, and nutritious, as bran, boiled linseed meal, good hay, or cooked carrots or turnips.

"7. If moderate diarrhea or profuse staleing come on, they are on no account to be checked, as this is an effort of nature to throw off the disease.

"8. If there is great exhaustion, moderate doses of whisky may be given, but there is no use of pushing them, unless their good effects are soon seen."

The attention of the writer has been particularly directed to the value of the fever medicine before recommended in the treatment of pleurisy and pneumonia. During the year of his stay in Buffalo with Dr. Somerville, it was invariably used for all cases of chills and fever with remarkable success. Indeed, the writer does not remember a single fatal case, even of those that had been caused by exposure, or from badly-ventilated stables, or of an epizootic character, when treated within a reasonable length of time. The usual course was blanketing the horse comfortably warm and giving this medicine, in about the proportion and at intervals stated; the size and the condition of the case determining how much to give. A great many times while on the road the writer has had occasion to use this medicine for chills and fever, and always with success. Indeed, if this is given promptly, with anything like ordinary care, aided by other means as directed, there need be but little danger of failure. The point is, as repeatedly stated, to take the case in hand promptly at the start; watch closely the condition of the animal that has been exhausted, or hard-driven, and exposed to cold, especially during chilly, rainy weather, and if any indication of chill is noticeable, give a little of

the fever medicine once or twice, and blanket warmly, and it is rarely any serious trouble will follow.

The medicine is put up by Dr. Somerville, as a specialty, for the use of stable-keepers, and is regarded of great value. The real point of its value, I believe, is in its dilution. Simple tincture of aconite reduced, so far as the writer is able to understand, having all the beneficial effects claimed for the combination with belladonna or veratrum. Dr. Somerville is a thoroughly educated practitioner of the old school, of great experience, and his success in the treatment of chest difficulties (pneumonia) has been remarkable ; and he has depended mainly upon this preparation, antifever medicine, for his success. The method of his putting it up now may be somewhat different from the formula given ; but it will be found in every essential all that is required, by giving in addition, in cases of intermittent chills, quinine or other tonic medicine.

The writer would in all cases, if available, prefer using that prepared by Dr. Somerville,* as he is very careful to have the quality of the medicine reliable. It is put up in convenient form, and the extra expense is merely nominal, and he would advise his friends to obtain it of him or his agents, when available.

Dr. Chas. A. Myer's Treatment.

In conversation with Dr. Myer on the treatment of pneumonia and pleurisy, he stated that he treated them with decided success without using aconite, which is recognized as the best sedative for fever. I requested the details of his method of treatment, which I here include as an important addition to what I have already given on the subject :—

Have the animal well blanketed and cared for in a roomy stall, where there is plenty of circulating air, and give one of the following balls every eight hours:—

1 ounce carbonate of ammonia,
2½ ounces pulv. chincona bark,
½ ounce pulv. nux vomica,
3 drachms pulv. digitalis leaves,
2 ounces pulv. gentian.

Make into eight balls.

---

* Dr. Wm. Somerville, 127 Erie street, Buffalo, N. Y.

Also give the following in water twice a day:—

6 ounces nitrate of potash.
1 ounce bicarbonate of soda.
Make into six powders.

Have the animal's chest rubbed with alcohol two or three times a day for the first two days. Feed nutritious food, or anything that may tempt the animal to eat. The medicine must be continued until the animal commences to lie down, which will be from the sixth to the eighth day.

Pleurisy.

Symptoms rather obscure. Animal dull, dejected, off his food, sweats easily, pulsation from 60 to 80, small and weak, temperature 102½° to 104°; above this is sure death. Sometimes there is a cough from commencement, but often or in about half the cases there is no cough. During the first three or four days the extremities and ears are alternately hot and cold, appetite almost wholly lost. The fecal and urinary secretions are considerably lessened. The membrane of nose and eyes are injected. Tongue is generally foul, belly tucked up, does not lie down. The thoracic walls are fixed, breathing almost wholly abdominal, and elbows turned. If made to move suddenly, especially turning short around, there is a groan or growl. Breathing quick or catching-like and short. Often the right side only is affected.

Treatment.—Hot applications to the chest. This can be done best by wringing blankets out of hot water and applying them to the chest,—two or three blankets, one over another, and all covered with oil cloth or other blankets so as to keep in the heat. Rub limbs with alcohol; they may also be loosely bandaged. One of the following balls should be given every eight hours:—

½ ounce powdered opium.
1½ ounces muriate ammonia.
3 ounces powdered chincona bark.

Mix, and make into six balls.

Give the animal anything he will eat or drink. If the horse is taken during the early stages, this will cut it short in from 48 to 60 hours.

If in an after stage swelling begins to show itself below the chest walls, that is, between the fore legs, and extending backward, shows the least symptom of the trouble known as Hydrothorax, give the following remedy: Fluid extract digitalis, from twenty to twenty-five drops, more or less according to the size of the horse, every four hours, and continue until the swelling begins to lessen, then the intervals of giving the drops should be length-

ened to eight hours. If the swelling is very large, the skin should be punctured in from twenty to thirty places, and the parts bathed with hot water three to four times a day.

Hydrothorax, or Water in the Chest.

This is a sequel of pleurisy when neglected or not treated properly, and which can scarcely be said to be curable. When pleurisy is running into this difficulty, there may be some appearance of recovery ; the breathing and fever are not so intense ; the horse will perhaps eat a little ; the skin looks sleek and glossy ; these signs of improvement may continue for several days, but if the pulse is gradually increasing in frequency, and its strength diminishing, there is undoubtedly water forming in the chest.

When this has taken place to any great extent, there is difficulty in breathing, and a flapping of the nostrils ; the eyes are clear and unnaturally prominent ; the intercostal spaces bulge out, and the ear applied to the chest can only detect the respiratory murmur above the surface of the fluid ; the legs and breast will swell ; the circulation becomes more and more impaired, the pulse getting weak and indistinct.

Prof. Williams states, in relation to the cause of hydrothorax : "Of the termination of pleuro-pneumonia in hydrothorax, I have only to say that since I have abandoned the heroic or counter-irritating treatment [he advises hot fomentations to the chest ; discards all blisters and irritants], hydrothorax has been almost unknown to me. For this the principle of treatment is stimulants, tonics, and diuretics." I give the treatment of a leading authority, who advises as follows :—

"Give a pint of warm ale combined with one ounce of nitrous ether three times a day ; blisters applied to the sides, and iodide of potassium in 1 drachm doses twice a day ; feed the animal on nutritious and easily digested food.

"When a large accumulation of fluid takes place, it must be removed by tapping. The puncture is usually made in the intercostal space between the seventh and eleventh ribs, near their junction with the cartilages. The space between the eighth and ninth is usually recommended. An incision is first made with a lance through the skin, the trochar and canula is carefully pushed through the muscles and pleura, directed slightly upward and backward, keeping it close to the anterior border of the ninth rib, so as to avoid wounding the intercostal artery ; when the trochar is with-

drawn, the fluid flows freely through the tube; sometimes it gets obstructed by coagula of lymph, which should be cleared by inserting a small whalebone staff. Care must be taken not to allow air to enter the cavity, as death has often occurred from this cause during the operation. It is advised before making the incision to draw the skin aside so as to form a valvular wound, at the same time taking care to prevent the entrance of any air. The operation may be repeated in a day or two on the other side; but in most cases the relief is but temporary. In any event tonic treatment, such as sulphate of iron, tincture of gentian, stimulants and diuretics, iodide of potassium, are to be depended upon if successful."

Hydrothorax was a very common result of pleurisy, when treated by bleeding, blistering, etc. The congestion or inflammation in the first place is due to debility, and bleeding only increases it; and especially when the bleeding is repeated, though for a time there was apparent relief, fever and increased debility followed, resulting usually unfavorably.

The treatment advised for pleurisy, if the case is attended to promptly, even though very severe, will be found so effective as to leave but little probability of any serious effusion taking place.

Typhoid Pneumonia.

Cause is mainly attributed to those influences which interfere with the general health and vigor of the animal, among which stand pre-eminently overcrowding, improper ventilation, confinement in damp, filthy stables, drinking bad water, holding in solution decomposing organic matters, insufficient nourishment, and undue exposure, together with what may be termed, generally, atmospheric causes.

Symptoms.—The horse is off his feed, disinclination to move, appetite gone, pulse weak and low; will sometimes eat a little, will not lie down, stands hanging his head, is listless and stupid, not much cough, rarely any discoloration of the membrane of the nose or eyes; urine scanty and high colored; feces hard and coated. After two or three days the membrane of the nose and eyes is a little discolored or red, pulse quicker, 65 or 70, breathes quicker. About the fourth or fifth day there is usually a discharge from the nostrils, of a blackish brandy colored cerum.

Treatment.—As the word typhoid means low, it is necessary to watch it carefully in that stage, which will last as described in

the symptoms, the first four or five days, when in many cases the pulse may run down to thirty. Stimulants should be used at this stage, such as a little brandy and water or whisky and water. A gill or two of liquor to be given as a drench, or what is much better, is, take carbonate of ammonia, from one to two drachms; powdered ginger root, one to two drachms, made into a ball with honey or molasses, and given twice a day. It should be remembered that this treatment alone is intended only for the low stage of the disease. When the pulse seems to rise to fifty or sixty about the fifth or sixth day, the patient should then be treated as for pleurisy, with fever medicine. Under the influence of the latter treatment, the pulse will recede and resume its natural number of beats (forty). In this form of disease the horse is extremely prostrated at first, the whole system being inactive. The pulse may run up in time to seventy, or even eighty.

The horse should be kept moderately warm, clothing thoroughly the head, neck, and extremities; he should have a comfortable, well-ventilated stall; open the bowels by enemas; give tepid water to drink in which is a little nitrate of potash, as advised for pneumonia. Nurse the horse with anything he will eat,—a handful of wet hay, a carrot or two, an apple or a potato, or anything of an alterative nature.

Be careful not to exercise too soon.

Bronchitis.

Bronchitis, or inflammation of the mucous membrane of the bronchial tubes, is often associated with inflammation of the lungs, but also occurs as a separate affection.

Causes are similar to other pulmonary diseases. It is a result of laryngitis, or catarrh; or it may depend on atmospheric influences, and in these cases it is always accompanied with great weakness and prostration.

Symptoms.—There is a short, dry, and husky cough, speedily becoming more prolonged. When a horse gives a natural cough, he opens his mouth a little; but when laboring under this disease, he keeps his mouth closed, trying to suppress the cough. As the disease advances, the mouth becomes hot and dry, the ears and extremities alternately hot and cold, the pulse not hard and wiry

as in pleurisy, but soft and compressible, and the respirations are quick and hollow. If the ear be applied to the breast, a rattling sound can easily be detected; the bowels are inactive, and the appetite is gone. Death may occur in from three to five days.

Treatment the same as for laryngitis, explained on page 845; counter-irritation to the throat, and if there is fever, give fever medicine or aconite, as for pneumonia. If the cough is very distressing, give the following every night and morning:—

1 drachm extract of belladonna.
2 scruples powdered digitalis.
1 drachm camphor.
1 scruple powdered opium.

Colic.

Colic is so common as well as dangerous a difficulty, often proving fatal in a few hours, that it is of the greatest importance to know what to do, and to be able to do it promptly when it occurs; since, if treated properly, it is rare that it cannot be relieved without difficulty; whereas, if neglected, or not treated properly, as stated, it frequently results in the death of a valuable horse.

There is no disease about which there seems to be so much difference of opinion among horse-men. When the horse is taken sick suddenly, showing the symptoms of colic, the owner, or some neighbor called in who is presumed to know, assumes at once it is caused by bots; another supposes it is belly-ache; while a number of others who may be present, are equally positive in stating what they believe to be the cause of the trouble. The treatment, too, is on the same principle, equally doubtful, if not ridiculous. The first and most common remedy is plunging a knife into the roof of the horse's mouth to bleed, so as to give blood to the bots, or relieve the colic, or "whatever it is"; this hap-hazard cutting is liable to sever the pallet artery, and endanger the horse's bleeding to death. I have several times, when traveling, been called to treat cases so gashed in the mouth that they would have bled to death if not stopped promptly. (See Bleeding further on.) The next resource is, running the horse up and down the street, or kicking him in the belly, giving sweet milk and molasses, including a variety of other remedies advised by friends. No one would pre-

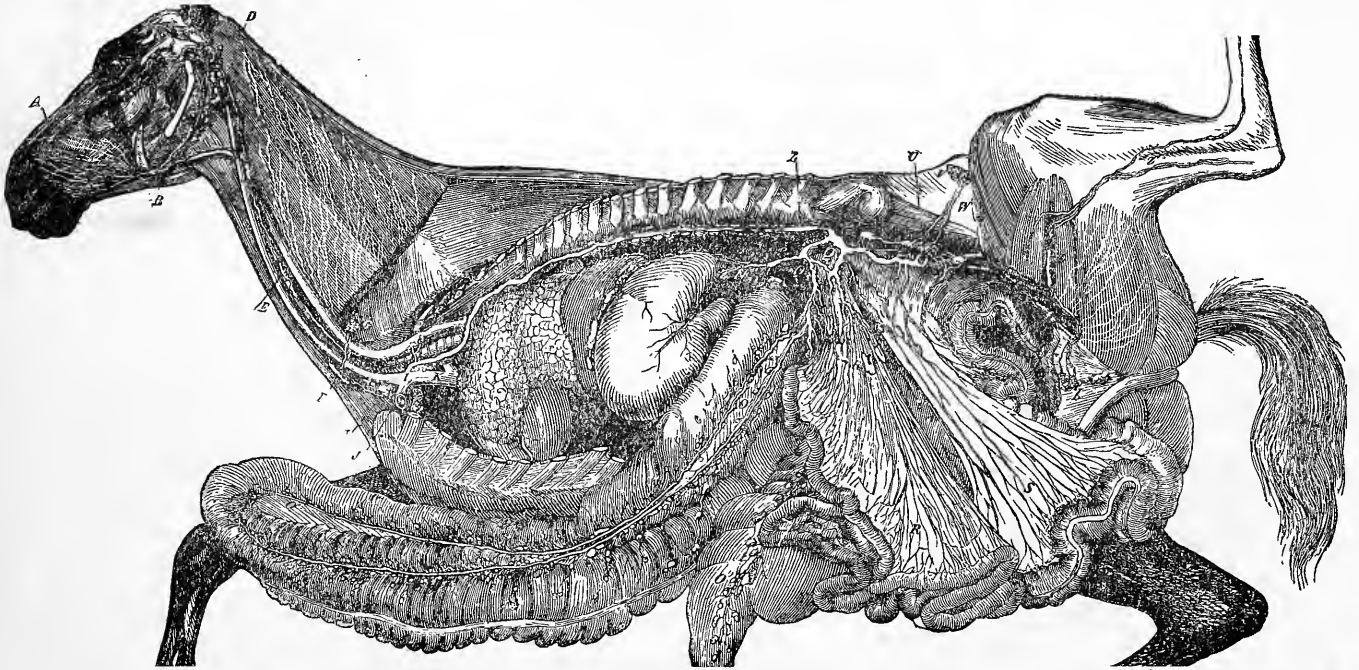


FIG. 776.—Showing Internal Organs, including parts involved in Colic and Inflammation of the Bowels.

A. Facial and nasal plexus, whose branches pass to the sub-glossal glands; *B. C.* Parotid lymphatic gland; *D. E.* Large trunks passing towards the thorax; *J.* Junction of the jugulars; *K.* Summit of anterior vena cava; *L.* Thoracic duct; *V.* The receptacles of the lymphatics of abdominal parietes pass.

tend to be able to explain definitely the nature of the trouble; but they *believed* it was this, that, or something else, and the consequence was that the poor horse was liable to be tortured for hours, often killed, by cruelty or repeated dosing with remedies that were not applicable to the case. While it is true a horse may show the symptoms of colic, from a variety of causes, which would mislead the judgment of even good practitioners, it is so exceptional as to be scarcely worth referring to here.

It was stated in another part, by the writer, that he employed a veterinary surgeon of unusual skill and experience, to instruct him in his method of treatment for the cure of such diseases as are most common and dangerous to horses in this country, including the prescriptions used by him for the same.

The first morning, while waiting in the office for the commencement of this instruction, the doctor came in hurriedly, saying, "There is a horse here that has colic; I wish you to observe his condition carefully; notice what will be done for him; in the meantime read every authority in the library on the causes and symptoms of colic, but do not read the treatment, as the treatment given in books is not reliable, and would only mislead you."

As directed, I noticed carefully the condition of the case and the effect of the treatment, which was favorable. In the meantime I read up on the subject, and that evening I was given a lecture on colic, when the doctor informed the writer that he had killed hundreds of horses before he knew how to treat it successfully; and that the treatment given in books, and generally advised, could not be depended upon to cure colic with anything like certainty; that even veterinary surgeons of very high standing could not feel any certainty of being able to cure colic; that it was found especially difficult to cure flatulent colic, or tympanites. "Now," said he, "we can cure every case that comes into this stable, if we can have an opportunity of treating them within a reasonable length of time, or before there is a colapsed condition of the circulation."

The opportunities for treating colic in the Infirmary were very many. The Erie Canal heads at that place, which necessarily concentrated a large number of canal horses in the vicinity, which, with those of the city, brought to the Infirmary almost every day a number of horses suffering with colic; and during my experi-

ence there of a year, there was not a single death from this cause; and since then, extending over a period of twelve years, I have used the same treatment in the cure of a great many cases, and had it used under my supervision, without the loss of a single case; this treatment I give first, having the utmost confidence in its great value.

There are two forms of this disease, namely, spasmodic and flatulent colic. The first is wholly of a spasmodic nature, and if not promptly relieved, will, in severe cases, run into inflammation of the bowels, causing speedy death. The second, while exhibiting the same general symptoms, shows marked enlargement of the belly, from generation of gas, which, if not checked and neutralized, results fatally by rupturing the diaphragm, causing suffocation and death. The advantage of this treatment for colic was first, in making a fair trial of the best anti-spasmodic, laudanum; then, if it failed to give relief, or if there was relapse, bleeding promptly, which not only gave relief with more certainty, but prevented a tendency to inflammation, thereby making a cure when medicine proved unavailing. Secondly, in giving peppermint for flatulent colic. He found by experimenting that peppermint was the only remedy he could depend upon for neutralizing the distending gas; and its combination with ether, as the best for giving relief.

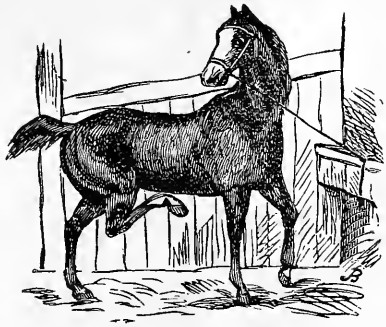


Fig. 777.—First stage of Spasmodic Colic somewhat exaggerated.—*Mayhew.*

Causes.—The common causes of colic are a sudden change in the feed; very often during the summer when running at pasture, if taken up for a day, and a feed of oats or dry food given, it is apt to cause gripes; feeding new oats or new corn is a common cause; applications of cold water to the body; drinking freely of cold water when heated, especially if hard well-water, often gives rise to a severe attack; worms and other intestinal irritants may induce it; costiveness and unwholesome food often cause it; overloading the stomach, or being put to work on a full stomach, will give rise to it.

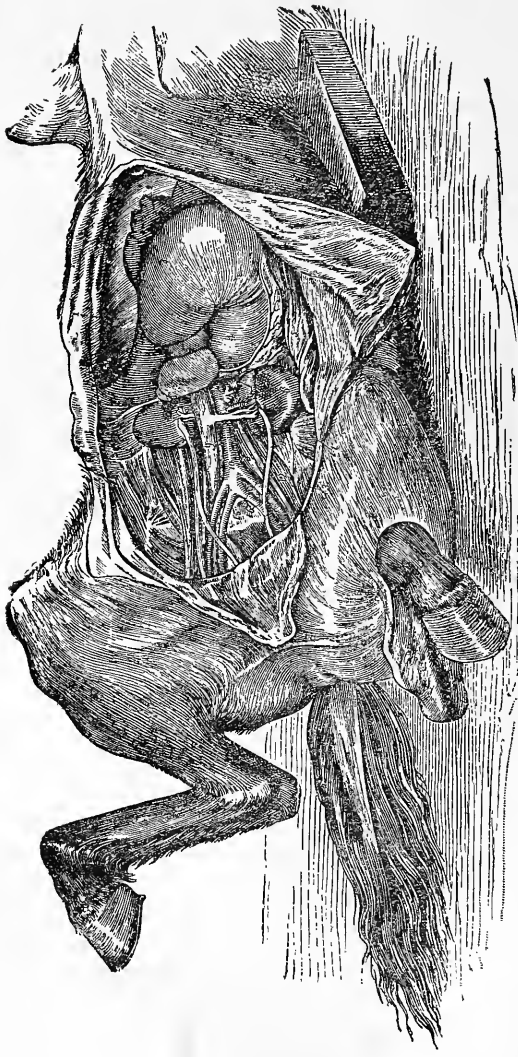


FIG. 778.—The Abdominal Cavity, the Liver, and other Organs.

1. Right lobe of the liver; 2. Middle lobe; 3. Right extremity, or ventriculus of stomach; 4. Right extremity; 5. Left abdominal wall.

Symptoms.—The animal is suddenly seized with pain in the bowels, becoming restless and uneasy, crouching, sometimes striking up towards the belly with the hind foot, looking round to his flanks, evincing great distress; he gets down after several apparent efforts, rolls about, sometimes on his back, sometimes quite over.* (These symptoms I try to illustrate by Figs. 780 and 781, which of course are ideal, but will serve to give a good idea of the main symptoms. Fig. 777, which I copy from Mayhew, is con-

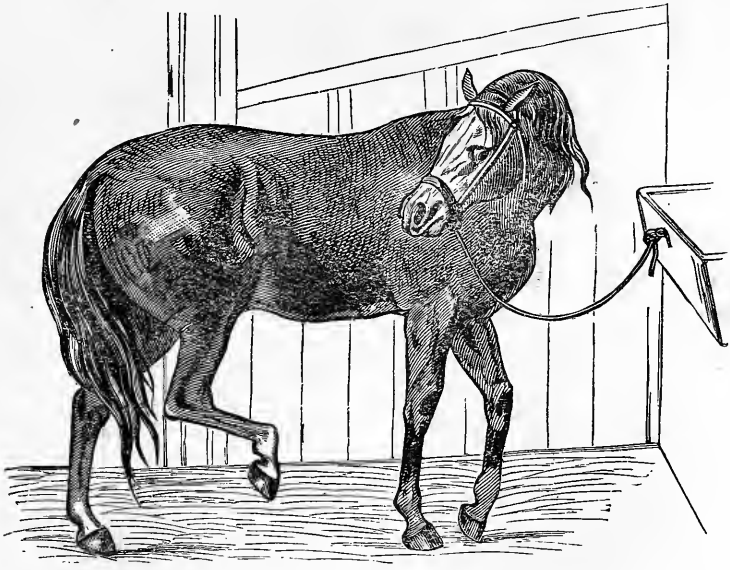


Fig. 779.—First stage of Spasmodic Colic.

siderably exaggerated, head being held too high, showing too excited and nervous an expression, and the hind leg brought too near the body. Fig. 779 shows a common symptom of the early stage, drawn under my own supervision, and is more natural.) Profuse perspiration breaks out over him. The paroxysm soon

* He may also act as if he wanted to make water, which he cannot do, there being a spasmodic contraction of the urethra. Hence the desire to give diuretic medicine. Straining in this way is usually prompted by a desire to relieve the muscles of the belly. No diuretic medicine should be given, as the horse cannot pass urine until the attack of colic ceases, or it is taken from him with a catheter. It is very seldom necessary to use a catheter. In fact, it is not necessary to pay any attention to this symptom. As soon as relieved of the colic, the horse will pass water freely.

passes off, and he gets up, shakes himself, and begins feeding; during the interval the pulse is unaltered; the legs and ears are natural in temperature. After an interval of longer or shorter duration,

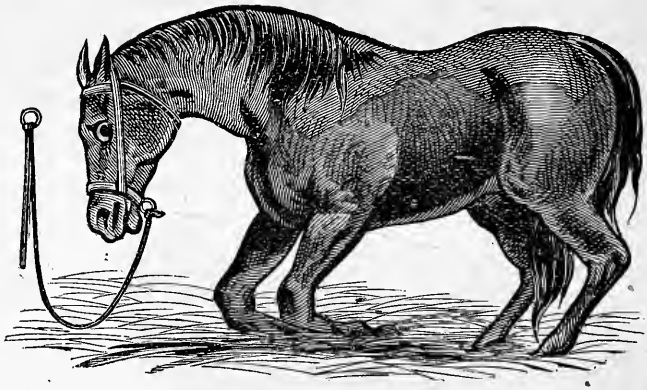


FIG. 780.—Second stage of Spasmodic Colic.

the attack returns, pernaps with increased violence, when he gathers himself, falls down and rolls about as before. As the disease advances, the symptoms become more severe.

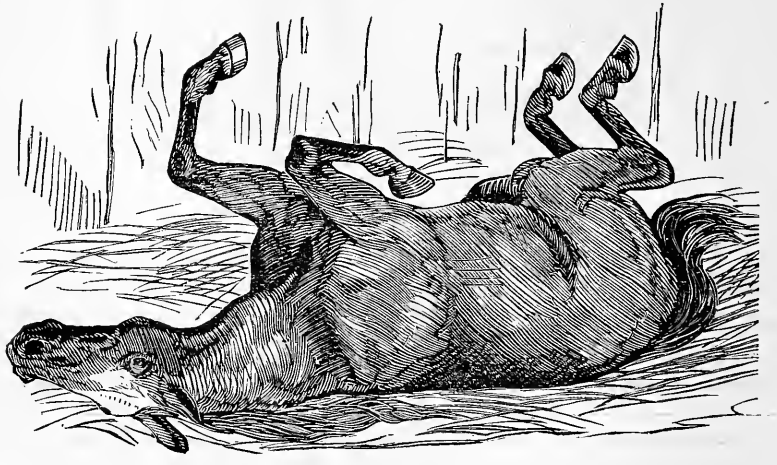


FIG. 781.—Third stage of Spasmodic Colic.

Youatt, in his description of colic, contrasts its symptoms with those of inflammation of the bowels, and though not exactly according to modern authorities, it will materially aid the reader in determining the difference; so I include it. I would also refer the

reader to the description of each by Dr. Meyer, which follows on page 895.

COLIC.	INFLAMMATION.
Sudden in its attack.	Gradual in its approach, with previous indications of fever.
Pulse rarely much quickened in the early stage of the disease and during the intervals of ease, but evidently fuller.	Pulse very much quickened, but small, and often scarcely to be felt.
Legs and ears of natural temperature.	Legs and ears cold.
Relief obtained from rubbing the belly.	Belly exceedingly tender, and painful to the touch.
Relief obtained from motion.	Motion evidently increasing the pain.
Intervals of rest.	Constant pain.
Strength scarcely affected.	Rapid and great weakness.

If not checked, or there is not relief, it runs into inflammation of the bowels, which is very fatal, and the point is to combat and overcome it before running so far as to resist treatment.

This disease being wholly of a spasmodic character, it must be counteracted by anti-spasmodic treatment; and laudanum being the most powerful and reliable anti-spasmodic, it is indicated.

Treatment.—Give from two to three ounces of laudanum and a pint of raw linseed oil.* If not better in an hour, give two ounces of laudanum and the same quantity of oil. If there is not relief in a reasonable time after the second dose is given, take from six to twelve quarts of blood from the neck vein, according to the size of the horse and the severity of the attack.† Always in bleeding make the orifice large, and extract the blood as quickly as possible.

In the Infirmary the practice was, as stated, to try the medicine, and as soon as convinced it was not sufficient to relieve the case, no time was lost in bleeding. Or, if a case was brought in that had been suffering some time, not only medicine was given, but bleeding was resorted to at once.

---

* This is the dose advised for a large horse. For a medium or small sized, nervous tempered animal, two-thirds the quantity would be equally large.

† It will be rarely found necessary to resort to bleeding if the case is attended to promptly, and in only very serious cases, where the horse is fat and large, is so large a quantity of blood to be taken. In ordinary cases, six to eight quarts would be sufficient.

Tympanites, or Flatulent Colic.

Symptoms the same as in spasmodic colic, with the difference of there being so great an accumulation of gas in the stomach and intestines that the belly is swelled. This disease will often prove fatal in from one to three hours. It is generally very sudden in its attack, often occurring while the animal is at work, particularly during warm or changeable weather; but it is generally caused by indigestion, producing gases in the bowels or stomach.*

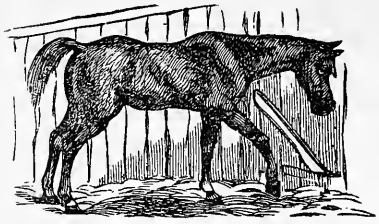


Fig. 782.—Early stage of Flatulent Colic.

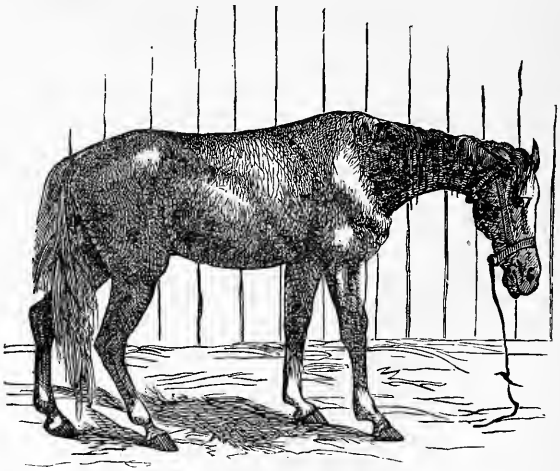


Fig. 783.—An advanced stage of Flatulent Colic, or Tympanites.

* There are two locations for this disease, the stomach and the colon and cœcum; but in either it requires the same treatment, as it is generally produced by the same causes. When in the stomach, it will be distinguished by eructations, or belchings of gas through the esophagus, or gullet. If in the colon or cœcum, the horse is violently swollen along the belly, flanks, and sides. The pulse is rarely disturbed until the disease advances, when it will become quickened, running to its height quickly, and receding as rapidly, if fatal. If to terminate fatally, it will become weaker and slower until it is almost imperceptible. If the animal is allowed to fall down suddenly, while the pressure of gas upon the walls of the stomach is very great, there is liability of rupturing the diaphragm, which would cause almost instant death from suffocation.

Treatment.—Blanket comfortably, so as to keep up evaporation, and immediately give the following as a drench:—

2 ounces peppermint.
2 ounces sulphuric ether.
1 pint water.

Shake up thoroughly, and keep covered with the hand or cork before administering. If not relieved, it should be repeated in one-half to three-quarters of an hour. If the horse is small, and the attack not severe, less may be given; while if very large, and the attack severe, even more may be given.*

During my practice of late years, when I had a case of colic, I usually gave the following preparation:—

1½ to 2 ounces peppermint.
1½ to 2 ounces sulphuric ether.
1 ounce laudanum.
1 pint soft water.

After shaking thoroughly, I gave this immediately. I have found it in all cases to give relief. It is particularly valuable to non-professional men who cannot, during the early stage, tell the difference between spasmodic and flatulent colic, and on this account it is the preparation the writer would advise. Stable-keepers should always keep it on hand, in readiness for an emergency, as it is very important to be able to treat this disease promptly.

If the horse is subject to attacks of colic, which are usually produced by irritating matter in the bowels, it can usually be relieved by giving one or two sharp doses of physic.

Dr. Myer's method of treatment is so good, explaining as it does some symptoms, with other points of treatment not given, that I include it in full:—

"First, there is a switching of the tail, followed by a pawing with the fore feet, and acting as if there were an inclination to lie down. Usually gets down and rolls, looks at the belly, rolls, then up again, and seems at rest for a few minutes, when he goes through the same actions again. The pulsation is full and strong, about natural. By looking at the inner surface of the eyelid there will be some sign of inflammation. When the attack is running into

*The ether disturbs the breathing, making the horse apparently distressed, breathing laboriously, which will pass off in a few hours.

inflammation of the bowels, or becomes seated, there will be an inclination to sweat, an anxious expression in the eye, increased respiration, the pulsation from 70 to 80, small and weak. The inner lining of the eyelid will be plainly injected or reddened, the animal at times looking toward the flanks; walks almost in a circle; makes attempts to lie down, coming down about half way, gets up and walks around again, which may be repeated a number of times; finally succeeds in getting down, which he does very carefully, then will lie outstretched for a few moments; will make an attempt to rise, and will sit up like a pig, as shown in Fig. 787, page 900.

"In colic, the horse throws himself down carelessly, rolls around in a careless manner, and then jumps up,—an important sign of death. After the case has been treated for some time, he may seem easier; but if allowed to have his own way, and he wanders off to some unusual place, it is positive proof that he is beyond medical aid.

"*Treatment for colic.*—2 ounces laudanum, ½ ounce spirits of camphor or 1 drachm gum camphor, 2 ounces sweet spirits of nitre, 2 drachms fluid ex. belladonna. Mix with one-half pint of water, and give as a drench. If the patient is no better in one hour, repeat, and, if constipated, use warm water injections.

FIG. 784.—Trocar and canula.

"Flatulent colic, treatment the same as above. In the early stage, if after about half an hour the patient seems no better, give two ounces of essential hartshorn in water, with warm water enemas. If by this time there is no flatus, or breaking of wind, and the animal's abdomen or belly is very much distended, and is belching up air out of the nostrils, and commences to tremble in his legs, an operation will have to be performed. Take a lance or knife and make a slight incision through the skin on the right flank, (the ox is always punctured on the left flank, and the horse on the right), at a point where the tympanitic sound is most marked. As a rule, this point is midway between the edge of the last rib and the hip bone; and about six inches from the lateral processes of the spine—about where the cross mark is on Fig. 785. Take trocar and canula, put the point into the incision previously made with the knife. Direct the instrument inward, slightly downward and forward, and hit it a sharp blow with the flat of the hand to send the instrument through to the hilt. Now draw out the trocar, when the gas will escape. When the escape of the gas has ceased, put a finger over the opening of the canula to prevent the air from filling in, and withdraw. When withdrawn, rub slightly with the finger over the wound, and leave it alone. Before performing the operation, give

four ounces of vegetable charcoal which has been kept dry, mixed with one quart of milk. The horse will have instant relief after the operation. If he remains quiet, feed nothing for about twelve hours. Give flaxseed tea to drink. After the expiration of this time, feed bran mashes, with oatmeal or ground oats, and continue from four to six days, when the animal will be well. When there is no hope by medicine, this operation is the only treatment that promises success. Should the horse be uneasy after the operation, give one of the balls used for inflammation of the bowels, which should be repeated once in from four to six hours until quiet."

FIG. 785.—The cross showing the location to be punctured.

During the warm months Dr. Meyer usually performs this operation from twenty-five to thirty times, to save life. His loss is about one in ten.

I would add that during my experience in Buffalo, I had no occasion to perform this operation, the treatment given proving in every instance effective. This operation, according to standard authorities, has been regarded as seldom successful. I think the

FIG. 786.—Method of puncturing the cow or ox when bloated.

reason is that the case has been allowed to go too long before resorting to it. In a conversation with Dr. Meyer in relation to it, he stated that he regarded it as very valuable treatment, enabling him to cure a large proportion of cases which otherwise would be beyond help. As it may in some cases be found necessary to per-

form this operation, I give a diagram of the body, showing the location of the point to be punctured, and also add an excellent illustration of the method of performing it upon cows or oxen that may become bloated,—a very common occurrence in cattle that are turned into a clover-field, and eat too much; and as most horse-owners are largely interested in cattle, I thought it of sufficient importance to give the illustration in connection with this article.

I give other important remedies for colic—those used by the leading colleges and experts—under the head of Remedies, in the latter part of this work.

When a horse is taken suddenly sick, especially after a drive, or after having been given cold water or a change of food, looking at his side, and acting as if he wanted to lie down, etc., simply catch him by the ear, and if it is warm, and the pulse is natural, it is always accepted as a proof of colic. Now, what can be done provided you have none of the medicine recommended? Give about a tablespoonful of ginger in a pint of hot water, well stirred; or giving as a drench from four to six ounces of good whisky or brandy, is sometimes very effective.

Hot fomentations to the sides and belly are also very effective, using woolen blankets wrung out of water as hot as can be borne, and covered with two or three other cloths to retain the heat, and to be repeated as they cool. A hot bran poultice would be somewhat better, as it would retain the heat longer. (Full directions for giving fomentations will be found under that head.) The fever medicine, given in doses of from a drachm to half an ounce, has also been found very efficient.

Inflammation of the Bowels.

Enteritis, also sometimes called red colic, may occur as a primary disease, but more often it is seen as a consequence of colic or constipation of the bowels. It generally proves fatal. As an idiopathic affection, that is, occurring independent of any other disease, it may occur from any of the causes of colic, particularly overloading the stomach.

Symptoms.—The animal is noticed to be unwell; he is dull and stupid; refuses food; has shivering fits, the mouth becoming hot, and extremities alternately hot and cold, the pulse being

quick, small, and wiry. He looks toward his flanks; the bowels are costive; after a time pain sets in, and is continuous and violent; he rolls about, the sweat pouring from him in streams; the eyes are blood-shot; the belly hot and tender. He does not throw himself violently down, as in colic, but lies down cautiously, and tries to steady himself on his back. As it goes on, the symptoms are augmented, the legs and ears get deathly cold, the pulse becomes weaker, and soon is imperceptible; the mouth gets cold and clammy; extravasation of blood is going on in the bowels; morti-

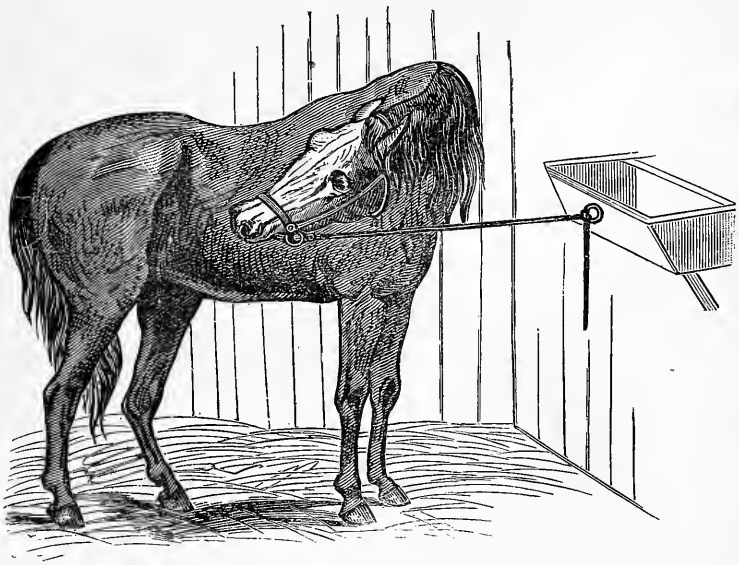


Fig. 787.—First stage of Inflammation of the Bowels.

fication sets in, the pain ceases, and he may stand up. He is dull and stupid, surface of the body cold, mouth cold, twitching of the muscles, and retraction of the upper lip. He soon falls violently to the ground, endangering the lives and limbs of the attendants who happen to be near him, and after a few struggles expires. After death, the bowels are very much inflamed, and the inner surface black and clotted with extravasated blood. Death sometimes occurs in from six to eight hours, and even in shorter time. When occurring in consequence of colic or constipation, it is very difficult to determine the exact transition from spasm to inflammation.

Treatment.—In the outset, especially when occurring as a primary affection, and not as a consequence of another disease, copious blood-letting will be advisable—from four to six quarts, or sufficient to make an impression on the pulse. He should be turned into a well-littered loose-box, and allowed to roll as he pleases. The bowels are obstinately constipated, but drastic purgatives are apt to increase the inflammation; our utmost efforts must therefore be directed to open them by copious injections (of

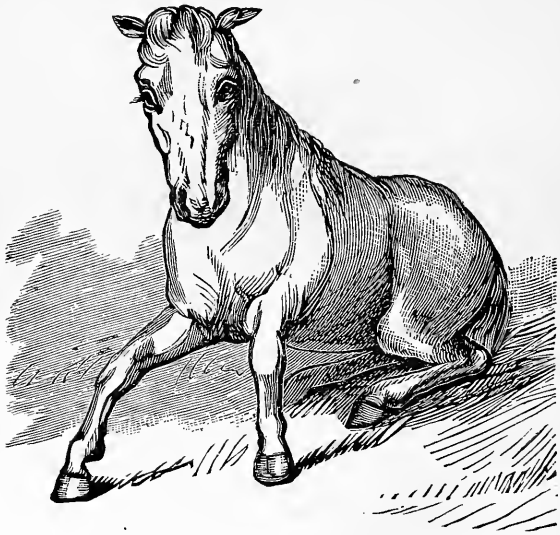


Fig. 788.—A sure indication of Inflammation of the Bowels.

linseed-tea, soap and water, tobacco-smoke, or infusion of tobacco,) back-raking, etc. A quart of linseed-oil, with two ounces of laudanum, should be given, and repeated, in half the dose, every one or two hours, if required. Fomentations of hot water must be constantly applied to the belly, or bags wrung out of boiling water. Where, from the violent tossing of the animal, this is impracticable, blister the belly with tincture of cantharides or mustard and turpentine.

If the symptoms do not moderate in a few hours, the pulse continues full, and the legs and ears not very cold, a second bleeding may be advisable; but this is seldom the case, as the prostration is rapid, the pulse becoming small, wiry, and almost imper-

ceptible, and the legs and ears deathly cold. In this case bleeding but hastens the fatal termination.

When it has continued eight or ten hours, if it takes a favorable turn, the pulse becomes fuller, the surface warmer, and he will lie for some time stretched out, apparently asleep, being weakened from the disease and bleeding, and probably partially narcotized from the laudanum. In this stage he must be made comfortable, and covered up in straw or sheets. We usually "bury" him in straw. This restores the balance of the circulation, often causing him to sweat; and after lying thus for one or two hours, he will get up relieved, and begin to feed.

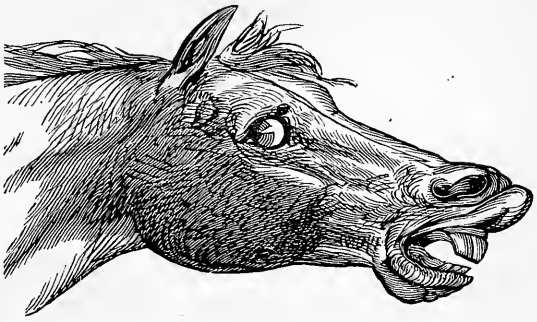


FIG. 789.—A symptom of inflammation of the bowels, or great internal pain.

No hay must be given him. After a little, he should be encouraged to drink well-boiled gruel, or eat a thin bran mash. Injections must be continued till the bowels are freely opened. For a few days he must be kept warm; a few mouthfuls of cold water may be given every hour; gentle walking exercise and sloppy diet must be continued for some time. About the fourth day, even though the bowels have become regular, he should have a purgative (from six to eight drachms of aloes, made into a ball), to remove ingesta, and restore the secretions to their natural condition.

The following is the treatment advised by Dr. Somerville:—

"This disease is generally caused by constipation of the bowels, hard driving, over-purging or looseness of bowels, or drinking cold water when warm. Constipation is, however, the principal cause of the disease, and when this is the case, the first and most important condition of relief is to get an action of the bowels.

"*Symptoms.*—For the first few hours the horse is uneasy, paws, looks around at the side, the pulse is slightly accelerated and wiry. As the disease advances, the intermissions between the attacks become less, pulse quicker, running from seventy to eighty beats in a minute, in some instances even faster; lies down and gets up, shows much pain, no swelling of sides; now begins to exhibit fever, bowels constipated, urine highly colored and scanty.

"*Remedy.*—Give a quart of raw linseed oil. If constipation is very great, add from four to six drops of croton oil.

"If scours or over-purging, give an ounce and a half of the tincture of opium with six ounces of water. But in order to suppress the inflammation, it is necessary to bleed immediately from the neck vein from six to ten quarts of blood, according to the strength and size of the animal. In extreme cases bleeding may be repeated to the extent of four to six quarts in three or four hours. If much pain exists in constipation, give from one to three ounces tincture asafœtida. Feed lightly for a week at least, giving gruel, roots, grass, and bran mashes, and keep quiet. Do not exercise for several days if there is danger of a relapse. This is a dangerous disease, and requires prompt treatment."

Treatment advised by Dr. Charles A. Meyer:—

"The first stage of inflammation of the bowels is when the animal sits on his haunches like a pig, gradually gets up, and walks around as if in great agony; makes attempts to lie down, and when he does, goes down very carefully; may make a few rolls; will gradually straighten out again, attempts to rise, and sits on his haunches again like a pig. This position is a sign of bowel inflammation, and to save the patient the treatment must begin in earnest. Should the patient be fat and plethoric, bleed from the neck from two to eight quarts, according to the size of the horse. Apply a strong rubifacient to the abdomen, of 1 lb of strong mustard, 2 oz. aqua ammonia, and water sufficient to make into plaster; rub in well, and cover with paper, to keep in the heat. Then give the following medicine:—

"4 drachms opium, pulverized.
2 oz. subnitrate of bismuth.
4 drachms chloroform.
2½ drachms nux vomica, pulverized.
Q. S. licorice root.

"Make into four balls, give one every 4 to 6 hours, according to the uneasiness of the patient, who must be kept quiet, and these balls will do it. Feed soft, nutritious food, warm water, and no hay, for about one week."

Superpurgation, Diarrhea, etc.

An over-relaxed state of the bowels may arise from various causes. In some animals it is favored by peculiarities of conformation, as is seen in *washy* horses, animals with long legs, open ribs, and flat sides, with tucked-up bellies, such being liable to purge from the simplest cause.

Change of feed, especially from dry to green, or unhealthful food, and sometimes through nervous excitement, is apt to produce scouring. It is usually the evidence of something wrong, and the

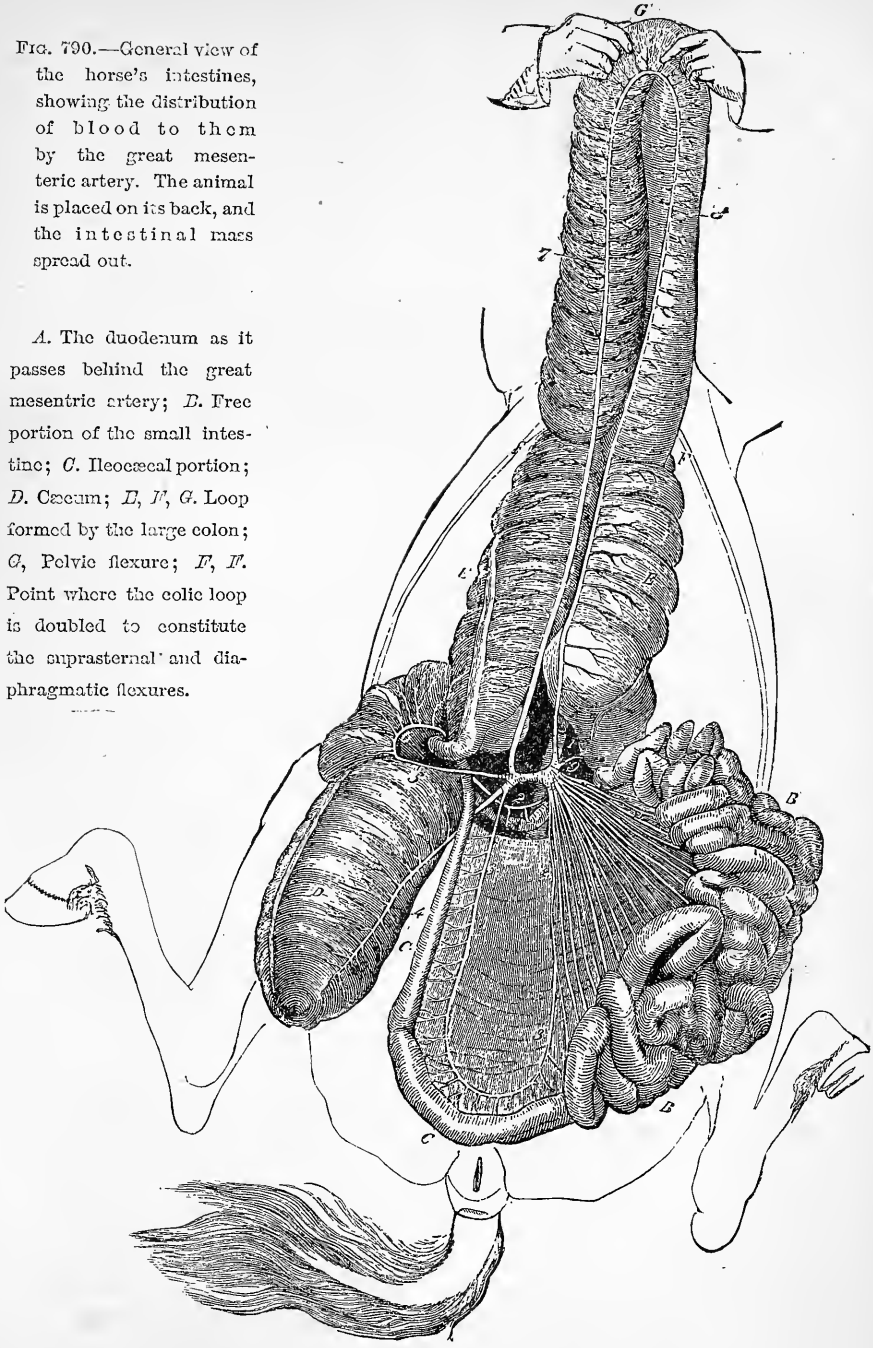


FIG. 790.—General view of the horse's intestines, showing the distribution of blood to them by the great mesenteric artery. The animal is placed on its back, and the intestinal mass spread out.

A. The duodenum as it passes behind the great mesentric artery; *B*. Free portion of the small intestine; *C*. Ileocæcal portion; *D*. Cæcum; *E*, *F*, *G*. Loop formed by the large colon; *G*, Pelvic flexure; *F*, *F*. Point where the colic loop is doubled to constitute the suprasternal and diaphragmatic flexures.

effort of nature to remove it. Some irritant or indigested food being lodged in the bowels, the intestinal fluids are poured out in superabundance to remove it. The incautious use of purgative medicines is a common cause of superpurgation. It often occurs in the latter stages of debilitating diseases, when it is always an untoward symptom, betokening a breaking-up of the vital powers. The presence of little white *worms (ascarides)* is occasionally the cause. It sometimes follows the drinking of cold water when an animal is in a heated state.

Symptoms.—The symptoms vary according to the nature of the case, and the causes that give rise to it. It may be simply an increased fluidity of the contents of the bowels, as is seen in washy or nervous animals, unaccompanied by pain or constitutional disturbance; or, on the other hand, it may be (as in superpurgation) attended by pain, expressed by the uneasiness, pawing, looking to the flanks, etc. He strains frequently, and the fœces are very watery; the pulse is small and hard. Rapid and increasing weakness and emaciation, loss of appetite, and unless means are speedily adopted to check it, inflammation of the bowels is apt to set in.

Treatment.—Great care must be exercised in feeding and watering washy horses, dry feed being best suited to them. They should not be allowed to drink too freely of water, especially before work. In many cases it may be necessary to give them some starch or chalk mixed up in the feed. In all cases, the main point is to discover the cause. If arising from improper food, it must be changed at once.

If some irritant be suspected, nature must be assisted in her efforts by giving a quart of linseed or castor oil, followed up by starch or well-boiled flour gruel, keeping the animal warm. If worms are suspected, or seen in the dung, one or two ounces of spirits of turpentine, or any of the vermifuges recommended, should be added to the oil. Should it not yield to this, neutralize the acids in the bowels by giving an ounce and a half of prepared chalk and a dram and a half of powdered catechu, mixed in a pint of water. Give once or twice a day until purging ceases. Keep the animal without exercise, and do not give much water to drink.

If this disease should arise from nervous excitement, give a

drachm of powdered opium in the food once a day for three or four days. Or give the following astringent drench:—

1 drachm powdered opium,
4 oz. prepared chalk,
1 oz. gum acacia.

Dissolve in warm water, and give in well-boiled flour or starch gruel. It may be given two or three times a day, the gruel being given frequently. If very severe, injections of solution of catechu and starch, with a little tincture of opium, should be given.

The belly may be stimulated with liquid blister. He must be kept perfectly warm, and the legs bandaged. Care must be taken not to induce an opposite state of the bowels by the injudicious use of astringents. An ounce each of carbonate of soda and ginger should be given daily for some time after recovery. Rest and good dry food are necessary for some time.

Constipation.

Constipation is a condition the very opposite of the above, in which we have a diminished action of the bowels, the dung being dry and voided with difficulty, leading to dangerous "stoppage of the bowels." It arises from various causes, especially from being fed on dry, fibrous food. If in pasture in the fall, when the grass is tough and fibrous, with perhaps a scarce supply of water, the fibrous ingesta are liable to become felted together, and impacted in the bowels. Want of exercise, and feeding too much grain, are also prominent causes.

It is sometimes accompanied by inflammation of the bowels. Horses that are kept up, or not worked regularly, and especially if fed on dry food, should have an occasional bran mash with plenty of water to drink. Or small doses of laxatives, aloes is the simplest and best, from two to four drachm doses, with green food. If accompanied by colic, or inflammation of the bowels, back-raking, etc., must be resorted to until relieved. Green grass is about the best laxative.

All horses, especially those advanced in years, should be watched carefully, and when there is any tendency to constipation, it should be prevented, as before stated, by giving bran mashes, carrots, and raw potatoes; or, if thought advisable, a little oil or physic, with regular exercise and sufficient water, and

there will usually be no difficulty. It is very important to look to this condition; neglecting it, colic, inflammation of the bowels, etc., may result.

Worms.

Worms are most commonly found in the stomach and bowels; they are also sometimes met with in almost every part of the body. Investigation shows there are over thirty kinds of worms that infest the horse. Dr. Robert Jennings, about twenty years ago, at that time a resident of Borden Town, New Jersey, and now of Detroit, Michigan, informed the writer that he had traced out thirty different kinds in the horse, and among others exhibited a piece of muscle that was perforated by a large number of little white worms from one to two inches long.

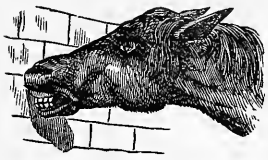


Fig. 791.—Symptom of worms.

Mr. White, an old author, says:—

"I have found worms in the wind-pipe, in the mesenteric artery, in an abscess in the substance of the abdominal muscles, and according to Lafosse, they have been found also in the pancreatic and salivary ducts."

There are but three or four that are very common. First, the *teres lumbrici*, a large worm from four to ten inches long, that lives in the intestines. It looks like the common earth-worm, yellowish white and tapered at both ends. Second, the *ascaris* or *ascarides*, commonly called needle or thread-worm, of a dirty-white color, usually from one to two inches long. They are sometimes found in thousands. They have been observed chiefly inhabiting the mucous coat of the cœcum, on the surface of which, it is supposed, they are developed in little cells, which, when matured, burst, producing considerable irritation, and often serious inflammation of the parts. They are also sometimes found to infest the rectum in large numbers, and to relieve the irritation they produce, the horse rubbing his tail.

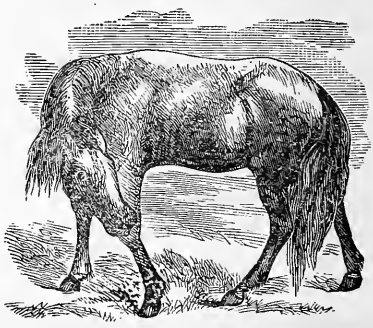


Fig. 792.—The appearance of a horse that is troubled with worms.

Varieties of *strongyli* and *oxyures* also occur, and are sometimes mistaken for *ascaris*. They are, however, distinct species; the former is tapered, and terminates in a spine, whereas the latter is blunted, with a head like a leather sucker. The *strongyli* inhabit the cœcum, colon, and duodenum; the *oxyures*, the mesentery, spermatic cord, and in fact almost every organ in the body. The common whip-worm, or long thread-worm, technically called the *trichocephalus dispar*, are found in the cœcum. They resemble a whip, the shank being about a third, and the thong two thirds of the length, usually about two inches. *Bots*, which inhabit the stomach, will be referred to especially following this article.

There is also a small thread-like worm, called *filaria*, from a half inch to an inch and a half long, which travels all through the system. This is the worm that sometimes gets into the eye and grows there. The *tape-worm* is sometimes found in the horse, for which I give a specific remedy used by Dr. Meyer with great success. (I give illustrations of a few

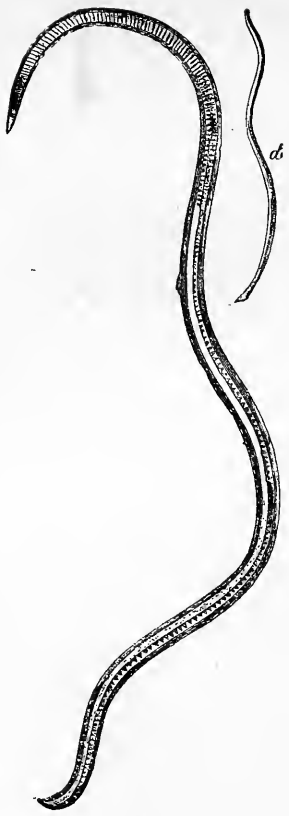


FIG. 793.—Ascaria Lumbricorde.

a, Female; *d*, Male; natural size.

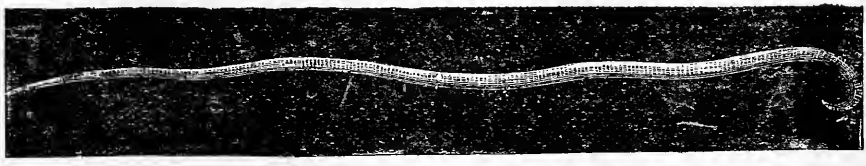


FIG. 794.—Ascaride margmata, enlarged.

worms, though not of all that I desired, on account of the difficulty of obtaining them. They will not, however, be of any special interest or importance to the general reader. Hence those ob-

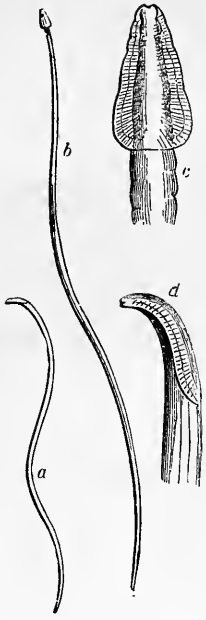


FIG. 795. — Ascaride mystax.

a. Male; *b*. Female; *c*, *d*. The expansion of its anterior part seen from the front and side.

tained are put in without regard to much technical explanation.)

Symptoms of worms are debility, feebleness, sluggish movements, emaciation, staring coat, hide bound, skin covered with blotches, irregular and capricious appetite, tucked up belly, pallid appearance of the lining membrane of the lip, badly digested fæces, rubs the tail, and where fundament worms exist, a whitish substance will be found about the fundament. Many horses have worms, and their presence is never suspected till they appear in the dung. Troublesome diarrhea is sometimes produced by the presence of ascarides in the cœcum, and are sometimes found in vast numbers in the rectum.

Treatment.—The horse should be put on bran mashes for a few days, then give him nothing but water for eight or ten hours, then give the following drench:—

1 quart linseed oil,
2 ounces spirits of turpentine.

In an hour after give a warm bran mash, and next morning give a dose of physic. If thought necessary, in about a week this may be repeated.

FIG. 796.—Young Filaria thread-worm.

A. Young worm as rolled up in the body of the mother; *B*. The same unrolled in a drop of water; *a*. Head, with the protuberances and mouth; *b*. Origin of the tail, with the anus (backside).

Dr. Somerville claimed there was no better medicine for the destruction of worms than calomel, and advised it to be given in the following combinations:—

3 drachms calomel,
1 drachm tartar emetic.

Mix, and divide into three powders, one to be given at night for three successive nights, to be followed in twenty-four hours with a good purging ball. Or,—

4 drachms aloes,
1 drachm tartar emetic,
2 drachms ginger,

About the size of a bean of calomel, and molasses enough to make into a ball. To be given every morning for three days.

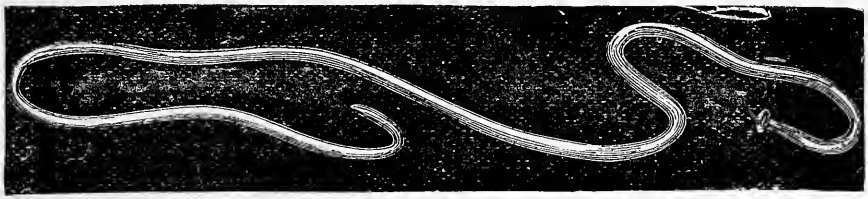


FIG. 797.—Strongula, enlarged.

Dr. Hamill found that in treating inflammation of the extremities caused by injuries, such as getting a nail in the foot, where excessive, that occasionally after giving a dose of aloes and calomel large numbers of worms were expelled. Would advise from two to four drachms calomel, with aloes according to size and temperament of the horse.

This is also corroborated by Dr. White, who advises to give

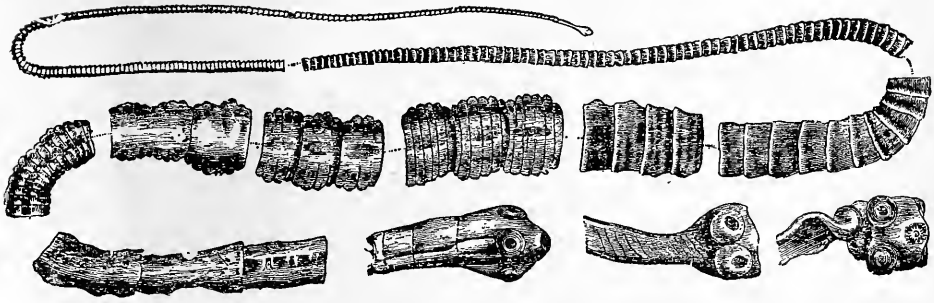


FIG. 798.—Tænia Solium, natural size. Fragments taken from distance to distance. The head is above, and very small. The last segments are longer than wide, show alternately the genital opening at the right and left.

one or two drachms of calomel with a dose of physic; or the calomel at night, and a dose of physic in the morning. Or give a drachm of calomel for three successive nights previous to the physic.

The following for worms was given the writer by a veterinary surgeon of very high standing:—

"Take hickory-wood, sumac-wood, and ordinary white ash, and burn to ashes. Feed a large spoonful twice a day for three days. Then follow up with a cathartic."

Prof. Gamgee's favorite remedy:—

"2 drachms assafœtida,
1½ drachms each, calomel and savin,
30 drops oil of male fern.

"Mass sufficient to form a ball to be given at night, and a purge in the morning."

Dr. Sheldon, formerly of New York City, depended mainly upon santonine, by the use of which he claimed great success, and which he also claims never fails to clean the worms out of a horse. He treated as follows:—

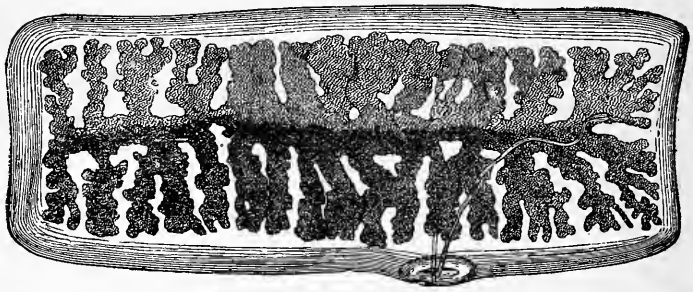


FIG. 799.—Tænia Solium. This cut shows the sexual passage communicating with the uterus, which is filled with eggs, and forming the black central mass. The second canal which goes out from the passage (opening) toward the uterus, is the male organ.

"First, give bran mash. In 24 hours give one drachm of santonine, which should be dissolved in water; then mix in a quart of starch, and give as a drench; in 30 minutes give aloes in solution sufficient to move the bowels promptly."

I include also a favorite horse-jockey remedy, which is regarded very good:—

"1 ounce aloes,
3 ounces spirits of turpentine,
6 eggs.

"Make into an emulsion, beaten together; give to the horse after being fed with two or three bran mashes."

Dr. White says:—

"A run at grass in the spring is perhaps the best remedy of all, for it is the most effectual means of invigorating the digestive organs and purifying the blood. When it is not convenient to turn the horse out, he should be fed green grass in the stable."

For *tape-worm,* take four ounces powdered pumpkin-seeds and a half to one pound of veal, cooked together until the substance is out of the meat. Make into a soup.

How to use: Fast for twenty-four hours, then eat one-half; after an hour take the other half, then take a brisk cathartic. This is the proportion for a man. For a horse, one pound pumpkin-seeds to one pound veal, and give as a drench.

This treatment was given by Dr. Meyer, who claims it is specific. Said he had one case of tape-worm in a horse, and it was the means of making a cure.

A few years ago, a gentleman who had been in the treasury department at Washington, informed the writer that he had suffered for years with tape-worm, and was entirely cured by taking pumpkin-seeds masserated, and he knew of a number of friends who had been cured by the same remedy.

This remedy is introduced mainly for the benefit of those who may be afflicted with tape-worm.

The following was given the writer by a special friend (a veterinary surgeon of high standing), as the treatment he would advise for the cure of worms; and though in part a repetition of what is given, it is so good that I include it:—

First, Lambricoids can be removed by drastic purges of aloes, or aloes and calomel. If calomel be given in from two to four drachm doses, on a fasting stomach of twelve hours, then fast from ten to twelve hours afterward, after which give small doses of aloes or saline purges, it will destroy nearly all traces of worms or parasites in the stomach and intestines, even clearing out bots. The best general treatment advised is santonine, areca nut, and male fern. Of santonine, better known as worm seed, the dose is from one to four drachms, according to the size and temperament of the horse. For the small, nervous, well-bred horse, the smallest dose would be sufficient; while for a large coarse-grained cart-horse the larger dose of four drachms will be necessary. Of the same quantities of powdered areca nut and male fern, about one ounce is the average dose. All vermifuge medicine should be taken while fasting, as better results will thereby be obtained; letting the horse fast ten or twelve hours before giving the medicine, and nearly as long afterwards. It is not necessary to give physic

after either of these medicines. Nearly all parasites in horses can be expelled by the judicious use of calomel.

Bots.

As among most owners and horse-doctors, every obscure lameness in the foot is supposed to be in the shoulder; so, when a horse is taken sick, nine times out of ten it is supposed to be caused by bots. If the horse turns up his upper lip, looks at his side, shows uneasiness, paws, and rolls, it is taken as a sure sign of bots.

It is claimed that as a rule bots are harmless parasites, seldom producing much mischief, and to be found in almost every horse that dies, sometimes in great numbers, adhering to the coats of the stomach; but about this there is much difference of opinion.

Prof. Law on the subject:—

"Bots are the larva of the *gadfly*, which are noticed to be so common, pestering the horse during the summer and autumn, darting at him around his legs and sides, and depositing their eggs on the hair of the parts. These eggs are caught by the horse when he licks the parts in defending himself, and swallowed. In the stomach they develop rapidly. By the aid of the hooks around their heads they attach themselves to the mucous membrane mainly of the left half of the stomach (See Fig. 800), but often also to other parts, such as the right side of the stomach, the duodenum or small gut leading from the stomach, and the throat. There they steadily grow in the winter, and in spring pass out in the dung, burrow in the soil, and are transformed into the gadfly. The disturbance they cause depends on their numbers and the portions of the canal on which they attach themselves. In the throat they produce a chronic sore throat and discharge from the nose, which continues until the following spring, unless they are previously extracted with the hand. In the left half of the stomach, which is covered with a thick, insensible cuticle, they do little harm when in small numbers; hence Bracy Clark supposed them to be rather beneficial in stimulating the secretion of gastric juice.

"When very numerous, and above all, when attached to the highly sensitive right half of the stomach or the duodenum, they seriously interfere with digestion, causing the animals to thrive badly, to be weak, and easily sweated or fatigued, and even determining sudden and fatal indigestions. This last result is especially liable to occur in spring or early summer, when the bots are passing out in great numbers, and hooking themselves at intervals to the coats of the sensitive bowels in their course. They will sometimes accumulate in such numbers as actually to block the passage."

In discussing the subject, White says:—

"They are generally attached to the cuticular or insensible coat of the stomach; but sometimes clusters of them are found at the pylorus, and even in the beginning of the first intestine named duodenum. In one case they were so numerous in this last situation as to obstruct the passage completely, and cause the animal's death."

Feron, an old writer, says he has paid particular attention to this subject, and has found that when in large quantities, they are very destructive to horses; that he had seen several horses whose stomachs had been pierced quite through by them, the bots making their way into the abdomen.

James Clark, of Edinburgh, an author of high standing, quoted in shoeing, relates a case of a horse's stomach being perforated by bots.

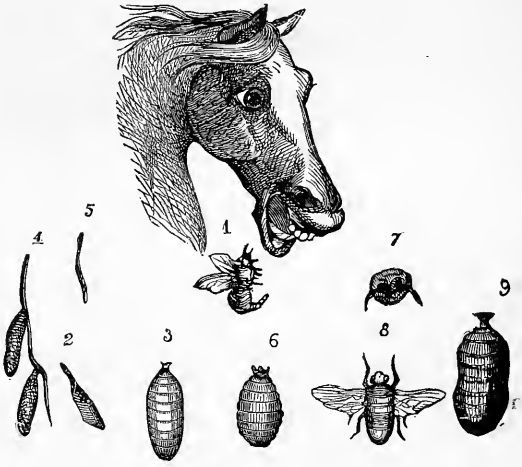


FIG. 800.—The gadfly, depositing eggs, with full-grown bots.

1. The female fly about to deposit an egg; 2. The egg magnified; 3. The bot; 4. The eggs magnified, attached to a hair; 5. The newly hatched bot; 6. The bot full grown; 7. The head of a bot magnified; 8. The male fly; 9. The chrysalis.

In Vol. II., page 73, "White's Farriery," Dr. White says:—

"I have seen several horses destroyed by these worms. In some of them they caused inflammation of the lungs; in one phrenzy, or mad staggers; and in one horse, the pylorus was completely plugged up with them. There is a remarkable sympathy or consent between the stomach and lungs, and it is owing to this that they sometimes cause inflammation of the lungs. In the cases which have occurred in my practice, the most remarkable circumstance was the great depression they occasioned."

Symptoms.—There is no way, so far as I know, and I have consulted a great many veterinary surgeons on the subject, of determining the symptoms of bots. A horse is taken sick, showing

all the symptoms of colic; he is treated for that difficulty, is cured, and the trouble is presumed to have been colic. According to the best authorities I can find, the conclusion is that the symptoms of bots cannot be distinguished from other diseases of the stomach and bowels; that sometimes when occurring in dense clusters around the pylorus or in the first bowel, they interfere mechanically with digestion, and keep the animal weak and emaciated, and subject to slight attacks of colic, capricious appetite, and irregular bowels. Beyond these indications, which may be identified with other difficulties, there is no way of determining whether they are the cause of annoyance.

Treatment.—This is doubtful. I give that which has been advised as the most effectual. White says:—

"The most likely means of expelling bots is to keep the horse without food during the night, and give him in the morning a quart of new milk sweetened with honey; and about ten minutes after, give four, five, or six ounces of salt in a quart of water."

Dr. Feron remarks that—

"Common oil given in large quantities has sometimes succeeded in detaching bots from the stomach. It is the only medicine that seems to have any effect in making them loosen their hold on that organ."

Blaine says that the continued use of salt mixed with the food appears to be obnoxious to them; for sometimes under its use their hold gives way, and they are ejected.

The popular remedy for bots is sweet milk and molasses, which is more safe than reliable. The following is recommended:—

"3 drachms each of aloes and assafœtida, rubbed down in hot water, and when cool add an ounce each of turpentine and ether. To be given every second day for a week, leaving out aloes if bowels become too open."

To relieve pain and uneasiness, any of the colic mixtures are to be given.

Prof. Law advises giving potato juice to feed and quiet the bots, adding some colic medicine if thought necessary.

In a report by Dr. Adams in relation to the subject, published about fifteen years ago in the "Medical and Agricultural Register," he stated, having made the following experiments at different times on bots *three-fourths grown*, that—

"When immersed in rum, they live 25 hours; decoction of tobacco, 11 hours; strong oil of vitriol, 2 hours, 18 minutes; essential oil of mint, 2 hours, 5 minutes. Were immersed without apparent injury in spirits of camphor, 10 hours; fish oil, 49 hours; tinct. aloes, 10 hours; in brine, 10 hours; solution indigo, 10 hours. A number of small bots, with one that was full grown, were immersed in a strong solution of corrosive sublimate; the small ones died in one hour, but the full-grown one was taken out of the solution, six hours after its immersion, apparently unhurt."

Inflammation of the Kidneys.

Inflammation of the kidneys is generally caused by hard work, by slipping, throwing the hind parts so suddenly under the belly as to produce undue tension of the lumbar vertebræ, or from sudden colds by being exposed to rain and cold, the eating of musty hay or oats, or unhealthy food of any kind. Too powerful or too often repeated diuretics produce inflammation of the kidneys, or a degree of irritation and weakness of them that disposes to inflammation, from causes that would otherwise have no injurious effect.

Symptoms.—Less or more fever of the system generally, and unwillingness to move, particularly the hind legs, dung hard and coated, very sensitive to pressure on the spine. The horse looks anxiously round at his flanks, stands with his hind legs wide apart, and straddles as he walks, shows pain in turning; the urine is voided in small quantities, and is usually high colored, sometimes bloody; the attempt to urinate becomes more frequent, and the quantity voided smaller, until the animal strains violently, without being able to pass any or but very little urine. The pulse is quick and hard, full in the early stage of the disease, but rapidly becoming small, though not losing its character of hardness. Introduce the hand into the rectum. If the bladder is found full and hard under the rectum, there is inflammation of the neck of the bladder. If the bladder is empty, yet on the portion of the intestines immediately over it there is more than natural heat and tenderness, there is inflammation of the body of the bladder. If the bladder is empty and there is no increased tenderness and heat, there is inflammation of the kidneys.

Treatment.—If the pulse is high, about sixty, take five or six quarts of blood, and give a fever ball; to be repeated in three hours if not better. Fever ball: 4 drachms Barbadoes aloes, 1 drachm tartar emetic, 2 drachms ginger, calomel about the size of

a bean, molasses sufficient to make into a ball. Counter irritation must next be excited over the seat of the disease. The loins should be fomented with hot water or covered with mustard poultice, or, better, heat a peck of salt in an oven, place it in a bag, and put it over the part affected. If the case is severe and protracted, a sharp blister may be used. *No diuretics are to be given, as they would simply aggravate,* and make the disease worse. After the bowels are open, give aconite, and treat as for fever. After recovery, the horse should be kept very quiet for a month, and if in season, turned out to grass. If in winter, feed with light mashy diet; exercise lightly by leading, if the animal be valuable and it is desired to aid recovery by extra care.

Profuse Staling (Diuresis).

Profuse staling, sometimes called diabetes, consists principally of simple, increased secretion of urine, without any apparent structural disease of the kidney, or much alteration of the composition of the urine, so characteristic of this affection in man.

Causes.—It arises in a great measure from feeding musty or heated hay, exposure to cold, etc. Frequently it occurs as an accompaniment of acidity of the stomach, or from the improper use of diuretics, as nitre, saltpetre, resin, etc., which are frequently given in large quantities for some time by grooms and ignorant persons, not knowing the harm they are doing thereby. It is of these ingredients also that most of the "condition powders" kept for sale, which are often liberally fed, are composed. It is not prudent, or at all necessary, to give such medicine, excepting for specific purposes, and then very cautiously. Intelligent owners give but very little medicine. Instead, they give bran mashes, etc., with good air, regular exercise, and grooming.

Symptoms.—The intense thirst first attracts attention; he is constantly craving for water, and rapidly loses condition; the coat becomes rough and staring; he passes large quantities of clear urine, his litter being constantly wet. He will be seen poking among his litter, which he often eats with avidity in preference to good hay. If it goes on unchecked, great prostration sets in, the heart beats tumultuously, the throbbing being often visible at the side, the pulse being irregular and intermittent.

Treatment.—It is generally very easily checked if taken in

time; a complete change of diet is indispensable; give good sweet hay; carrots are recommended. The bowels must be freely opened. Iodine in doses of two drachms, once or twice a day, is claimed to be a never-failing remedy, very useful in correcting the thirst and checking the flow of urine.

The following ball may be given night and morning:—

1 drachm iodine,
1 drachm iodide of potassium,
1 drachm barbadoes aloes;

Licorice and syrup sufficient to make a ball.

Or, give one of the following balls every night:—

½ ounce powdered opium,
1 ounce powdered kino,
1 ounce prepared chalk.

Mix with molasses, and make six balls.

Tonics should be commenced early. In some cases it can be arrested by making him drink water with pipe-clay or peasemeal shaken up in it. A run at pasture will often cure it.

Inflammation of the Bladder (Cystitis).

Causes.—It may arise from the too free use of diuretic medicines, or from the injudicious use of fly blisters or turpentine; sometimes from the presence of concretions or gravelly deposits in the bladder, or an extension of spasm, or inflammation of other organs.

Symptoms.—Almost the same as those of inflammation of the kidneys. Frequent voiding of urine in small quantities, quick pulse, looks frequently at flanks, paws violently, tender when pressed upon under the flanks.

When the body of the viscus is the seat of the disease, it becomes very irritable, the urine being passed almost as soon as it reaches the bladder, the act of staling being almost constantly going on.

The other symptoms are nearly analogous to nephritis; when examined by the hand in the rectum, it is found empty, hot, and tender. When the neck of the bladder is the seat of the disease, it will be found distended with urine, and, instead of frequent staling, we have almost complete suppression of urine.

Treatment.—The treatment resembles that recommended for nephrites, which see. Should the contraction of the neck continue, a gum elastic catheter should be introduced, or a little warm oil may (in the mare) be injected into the bladder. Small doses of bicarbonate of soda or potash should be given to neutralize the urine, which is usually acid.

Here the principal object is to lower inflammation and relax the muscular contraction of the neck of the bladder. Bleed largely, almost to fainting; give physic as for inflammation of the kidneys, or a quart of linseed oil. A drachm of powdered opium, made into a ball, or given in drink, every two or three hours, and blister over the loins. Give aconite, as for inflammation of the kidneys.*

Retention of Urine.

The most common cause is keeping the animal active, not giving time to urinate, and a spasm of the neck of the bladder or gravelly concretions; any cause of irritation may cause spasm. Symptoms are the same as in inflammation of the kidneys, except standing very wide behind, and when walking, a straddling gait resembling a cow with a very full bag.

The most prompt treatment is to use the catheter, and scarcely anything more is necessary. But if one is not obtainable, bleed freely, and give a strong opiate: 3 oz. tinct. opium, in half a pint of water.

Bloody Urine

Is generally the result of injuries of the loins, unwholesome food, violent exercise, etc.

Treatment.—Give plenty of linseed tea to drink; if the animal refuses it, drench him. Give internally, once a day, one of the following pills: sugar of lead, 1 oz.; linseed meal, 2 oz. Mix with molasses and divide into eight parts.

Diseases of the Nervous System.

The nervous system consists of the brain, which is lodged in the cavity of the skull (cranium); the spinal cord, lodged in the cavity of the vertebral chain; and numerous little white cords,

* If possible, call a veterinary surgeon, who will introduce a catheter, which will relieve the animal immediately.

called nerves, which are given out from the brain and spinal cord, and distributed to the different parts of the body, especially those parts endowed with sensibility, and under the control of the will. Besides this system of nerves, there is another set, independent of the cerebro-spinal axis, called the sympathetic or ganglionic system, which supplies the organs of nutrition and other viscera, blood-vessels, etc. It consists of numerous small centers, called ganglia, extending in two great chains from the head to the tail, on each side of the bodies of the vertebræ, closely associated with the other system by intricate communication.

Inflammation of the Brain (Phrenitis).

Phrenitis is not a very common disease, though the substance of the brain itself, or, as is more commonly the case, its membranes, or coverings, become inflamed. It has received various appellations, such as *mad staggers, sleepy staggers*, etc.

Fig. 891.—Symptom of inflammation of the brain.

Causes.—The causes are not thoroughly understood. Injuries to the skull, *metastasis*, or the transference of inflammation from some of the other organs, high condition and overwork, undue exposure to a hot sun, all seem to be favorable to its production. Horses that are too highly fed are subject to this, while moderately fed horses are scarcely ever inclined to it.

Symptoms.—It is usually ushered in by dullness and persistent drowsiness; he stands with his head between his legs, or sometimes resting against the manger or leaning against the wall; the eyes shut, and the pupils dilated; the pulse is full, soft, and slow; the breathing is heavy and loud; he is very difficult to arouse, and when startled, he looks dreamily about; may take a few bites of hay, but soon drops asleep again; the bowels are costive, and the urine scanty and high colored.

In a day or two the symptoms are mitigated, or it goes on to

the second stage, when the pulse becomes quick, general excitement takes the place of lethargic stupor; the countenance is wild and excited looking; the eyes are blood-shot and staring; delirium sets in; he dashes himself furiously about, reels and staggers, often throws himself violently down; lies trembling, blowing, and convulsed; his blood-shot eyes like to start out of their sockets; he will soon get up, rear and plunge forward, breaking everything around him; evidently unconscious of the injuries he is sustaining; and, what is characteristic of the complaint, his destruction is carried on evidently without purpose, as is evinced in rabies, or madness. The convulsions become more frequent and continuous, and death ends his misery in from twenty to twenty-four hours.

Treatment.—Copious blood-letting must be at once resorted to; no time should be lost in giving a strong dose of purgative medicine. One or both jugulars may be opened, or where, from the restlessness of the patient or danger in working about him, this is impracticable, the lancet should be plunged into the temporal artery, which will be found about three inches below the ear, between it and the nostril.

The following drench should be given:—

6 drachms Barbadoes aloes,
½ oz. carbonate of soda,
15 croton beans finely powdered,
Shaken up in a quart of warm water.

Three drachms of aloes may be given every three hours with copious injections every hour, till the bowels are freely opened. Sedatives should also be used, such as extract of hyoscyamus and calomel, a drachm of each shaken up in a little thin gruel, given every two hours. Seldom is repetition of blood-letting advisable; cold water should be constantly applied to the head; a small hose made to play upon it in a constant stream, where it is convenient, will be found very useful.

The favored prescription of a very successful practitioner is: "Give on the tongue every six hours about 1 drachm of the extract of conium." He gave this after falling.

Dr. Somerville's explanation and treatment of this difficulty are so plain and good, that I include them:—

"Is first noticeable by dullness or sleepiness of the eyes, an unwillingness to move, general heaviness of the system. This disease

is frequently called *megrims, fits, and mad staggers;* but in part only one disease, according to the extent of such disease as the animal may be affected with.

"The cause of staggers is an undue flow of blood to the brain, which rarely or never occurs in any animals except those in a plethoric (fat) condition.

"Some writers and practitioners assert that there is a disease known as stomach staggers. I have never seen a case where it was necessary to treat the stomach, but always direct attention to the brain, as being the seat of this disease, which may be properly called *head staggers.*

"In case of megrims, or fits, it is merely a lesser attack, or pressure of the blood-vessels on the brain, and *mad staggers* is a greater pressure of the same vessels on the same part. The brain is divided into two parts, namely, cerebrum and cerebellum, which occupy a horny box in the head. The blood-vessels passing over the brain and coming in contact with the skull, become distended by an increased quantity of blood, and produce the feeling which is thus exhibited.

"There is but one cure for this disease, and that is, remove the cause. Bleed largely from the neck—ten, twelve, or fourteen quarts, or until the symptoms of fainting. After the horse is convalescent, a sharp dose of physic should be given to regulate the bowels. I would advise owners of such horses to dispose of them. Once taken with the disease, they are subject to a repetition of the attack when the blood-vessels become filled again.

"*Note.*—Small doses of aconite (of the quantity for fever) may be given three or four times a day as a good preventive. Turning horses to pasture that may be liable to this disease will prove both injurious and dangerous."

When driven in the hot sun, the head should be protected with some sort of covering, which is now used very generally in many large cities, or a large sponge, kept wet with water, may be tied on the back of the head.

Megrims, or Vertigo.

The form of nervous complication known as megrims is not uncommon. Its nature is but imperfectly determined.

Causes.—It is often connected with worms or other derangements of the stomach or bowels, said also to depend on over-accumulation of blood in the head. The late Professor John Barlow found tumors in the choroid plexus of the brain. In these cases, it is often connected with over-feeding, and its consequence is derangement of the digestive organs.

It is most commonly seen in harness horses, usually during hot

weather, occurs generally on a heavy pull going up hill; probably from pressure of the collar interrupting the return of blood from the head, or "the long-continued constraint the bearing-reins put the head to," may prove the exciting causes in animals predisposed to it.

Symptoms.—All at once, when going along the road, he is observed to jerk up his head in a convulsive manner; he seems giddy, reels, staggers, may fall down and lie for a few moments insensible; he gets up, looks stupidly about, shakes himself, and proceeds as if nothing had happened.

At other times he merely stops, experiences a few convulsive movements of the head, with slight giddiness, which by letting him stand a few minutes soon passes off. He is ever after subject to these fits, especially during the hot summer months.

Treatment.—When depending on organic changes in the brain, it is incurable, and is subject to these attacks from time to time. When a fit comes on on the road, stop him at once, throw the collar forward off his shoulders and let him stand; if convenient, pour a stream of cold water over his head. Bleeding in the mouth has been recommended, but is quite empirical; it soon passes off. When occurring in a young horse for the first time, he should be well physicked out, and if worms are suspected, treat as recommended for worms. Tonics are often beneficial, especially arsenic given in doses of from three to five grains daily. Megrim subjects are dangerous hacks, and should only be used where they can do no harm to life or property.

Sun Stroke.

This is liable to occur during the hot summer months, particularly in large cities. It is usually caused by over-work or hard driving in the sun. Horses that are fat and young, and old, feeble horses are most subject to it. Wearing a sun-shade or a large sponge saturated with water on the top of the head, giving cool water occasionally, and sponging out the nostrils, and wetting the head, with of course moderate work or driving, are the best preventives. A very good plan, when driving through the country, where accessible, is to tie a few branches well covered with leaves so as to come over the head. They also serve to keep the flies away.

For light driving, a breast-strap is better than a collar, because it permits more freedom of the circulation.

Symptoms.—In severe cases the horse will suddenly stop, pant violently, possibly drop to the ground and die in a short time. When the attack is mild, he will flag in his gait, be unsteady in his limbs, spread his legs in standing, and totter. The head is held low, the eyes protrude, the nostrils are dilated, the pupils of the eyes smaller than natural, and the breathing rapid. Pulse is quick and weak, the heart beating violently and irregularly. Relief must be prompt.

Treatment.—Unharness, and throw pails of cold water over the whole body, especially on the back of the head, neck, and spine. Next, rub the skin energetically with rough cloths or bagging, or anything convenient. Then repeat the douching. The best of all medicine, it is claimed, is quinine. The quickest way to get its effect would be to inject from 25 to 50 or 60 grains under the skin with a hypodermic syringe. This is the remedy used in the East Indies, and it is claimed to be the very best in giving relief.

As a prompt diffusable stimulant during the severe depression, the following may be given:—

2 ounces sulphuric ether,
1 pint water,

Given as a drench. Or, 15 to 25 drops tincture of aconite, in a pint of ale.

After the attack has passed off, the horse should be turned out where he will be well protected from the glare of the sun by trees, etc., and allowed to rest for a few weeks; and if it can be avoided, he should not be driven afterward in the hot sun.

Azoturia, Partial Paralysis, Spinal Meningitis, etc.

Under these and other names we will notice a disease which is at times very common in this country, and very alarming in its aspect, from the suddenness of its attack and severity of its symptoms, producing almost complete loss of power of the hind quarters.

Causes.—It usually occurs in horses which are being "fed up," or which have been accustomed to hard work, and are allowed to remain in the stable for a few days, having a liberal al-

lowance of good feed; the system becomes plethoric, more blood being formed than the system can dispose of, whereby the vascular organs are overloaded, and consequently, under increased action caused by exertion, they are apt to become congested.

Symptoms.—The animal is apparently in excellent health and spirits. He starts off lively; but before he has gone far, he suddenly stops, crouches, seems very much distressed. The sweat rolls off him in streams; he blows and heaves at the flanks; he cannot move for a few minutes. He drops on his hind quarters; can hardly drag them after him. When made to move, he drops as if his leg was dislocated or broken. The pulse is very high, from sixty to eighty, and the muscles of the quarter are swollen and hard. In some cases he gets down, and cannot get up again; but seldom is loss of power at first complete, or sensibility entirely lost. The urine is generally very high colored; we have seen it black or coffee colored, which is a sure proof of the trouble, and always voided with difficulty.

Treatment.—When seen in the early stages, abstract six quarts of blood,* remove the urine with a catheter, and give from 7 to 8 drachms of aloes. Persistently apply hot water cloths to the loins, and cover them up well with dry blankets, changed every half hour. Give 20 drops of tincture of aconite in a little cold water every two hours, till the fever subsides. If the pain is very severe and twitching, give the following drench:—

2 ounces sweet spirits of nitre,
2 ounces tincture of opium,
1 quart cold water. Mix.

Injections of soap and water should be given, and the legs well rubbed and bandaged. It is important also that he be turned gently, about every three hours, and that his bedding be made as comfortable as possible. According to modern practitioners, who have had decided success in the treatment of this disease, it is not at all necessary to put in slings. In fact, the better recoveries are made without putting in slings; neither should he be urged to get

* There is some difference of opinion as to the propriety of bleeding. Some of the best practitioners do not now bleed for this difficulty, and while I should regard it good treatment, it may be omitted, as physicking with other treatment, will usually give sufficient relief; but if the case is very hearty, short-necked, and full blooded, bleeding would seem to be advisable.

up too soon; will usually do so of his own accord when able, but may be helped a little.

In most cases it will yield to this treatment, and in three or four days he will be convalescent. However, in many the loss of power increases; he makes frequent efforts to get up, but cannot support himself behind. In these cases the spine should be freely blistered with mustard and turpentine, or with the strong ammoniacal liniment. Good nursing and care are everything; in fact, indispensable. Give restricted diet, carrots, bran mash, etc. When all fever and acute symptoms have subsided, and recovery of power is tardy, give the following ball night and morning:—

1 drachm nux vomica in powder, made into a ball, with linseed meal and extract of gentian. Or, 2 grains strychnine, made into a ball in the same way.

The nux vomica or strychnine, whichever is used, should be gradually increased, until to the maximum of what the system will bear without serious disturbance, when it should be stopped, or the dose diminished. He should be well bedded up with straw, and as before stated, turned as often as once in every three to four hours. It often runs its course in from thirty-six to forty-eight hours, usually, however, in from three to six days. It is more fatal in stallions and geldings than in mares. If a veterinary surgeon is available, he should be called in promptly when this disease appears.

In a conversation with Dr. Macbeth of this city, (Battle Creek,) on the foregoing disease, he informed the writer that he had treated a great many cases during his practice, with success; that a short time before, directly after a severe storm, which was the cause of keeping the animals idle while kept on their usual amount of food, he had six cases, as a consequence, in one week, all of which made good recovery. One case had been down forty-eight hours, another some eighteen hours, and a third about twelve hours before being called. This success induced me to make the request that he would give me, in the fewest words, the outline of his understanding of the disease, with his treatment, which I give here as dictated by him:—

"This disease is generally common to horses that are worked hard, then stand still with regular feed, and when put to work, or when driven, perhaps not going more than a quarter to half a mile,

begin to sweat profusely, and in a few minutes afterward show great weakness in the back, acting as if having lost power to move the hind legs; in fact, appearing stiff all over. If not helped quickly, the horse is liable to fall down.

"**The Cause** of the disease is the horse making more blood, while idle, than the system can appropriate. When put to work, the muscles in the lumbar region become congested, and the consequence is the horse loses power to raise or control his hind parts. If treated properly, will usually regain his strength in from twenty-four to thirty-six hours.

"**Treatment.**—First give a sharp cathartic, also apply counter irritants over the region of the kidneys, using sheep-skin or counter irritants; also use the catheter. Give small doses of spirits of nitre with 10 to 15 drops aconite added from four to six hours apart. When fever subsides, give nervine tonics with strychnine in one-half grain doses, or powdered nux vomica in one-half drachm doses, in from two to four hours apart. If not very serious, about four hours apart.

"If the horse is not able to rise, must not let him lie on one side longer than three hours at a time. These cases are nervous and must not be excited. They must be handled very gently and walked around very carefully."

As I am about to hand this article to the printers, I receive a U. S. Veterinary Journal for December, 1883, published in Chicago, Ill., in which I find an excellent essay on this subject read by W. L. Williams, V. S., before the Illinois State Veterinary Association, and as an additional aid to successful treatment, I copy that advised by him:—

"The great essential in treatment is careful nursing, without which success is rarely possible in severe cases. As soon as the first symptoms appear, keep the animal as quiet as possible. If able to stand comfortably, have him stand as still as possible; if recumbent, procure him a good bed of straw at once, and by as quiet means as possible try to prevent any effort at getting up. This can usually be done readily by having a steady man hold the head, or he can be assisted by another man keeping the lower fore leg flexed against the chest by means of a strap upon the foot. Should the animal be standing, but growing more and more liable to fall, lose no time in getting him into the most comfortable place at hand. When already down, unless the weather be inclement or the location unfavorable, do not attempt to move him for two or three hours, when he should be removed to a well-bedded, comfortable loose-box or shed. We can with little difficulty roll him on a low sled or a farm gate, when a good span of horses will readily drag him to the stall door, and five or six men will soon place him where desired. Pass the catheter early, and keep it up twice or thrice daily so long as the animal remains recumbent. Remove

the shoes from the fore feet to prevent bruising of the chest and elbows while lying; apply hot cloths or slightly stimulating liniment to the loins and quarters. Keep the bowels open by moderate cathartics and enemas, and thus assist the kidneys in execrating the effete materials from the blood. The kidneys usually act freely enough, but should they not do so, diuretics should not be given during the early stages, as they would most likely increase the already excessive congestion. Allow plenty of fresh water and good, nutritious, easily digested food, if the animal will eat.

"After the second or third day, should there be great debility, vegetable tonics with alcoholic stimulants should be given in moderation. The animal should be turned from side to side three or four times daily, but on no account urged to get up, nor should slings ever be used, as they only aggravate the case and retard the recovery. When the animal is fit to be up, he will get up alone without urging.

"Should some degree of paralysis remain after two or three weeks, nux vomica conjoined with diuretics are to be used. In mild cases, a gentle cathartic, with a day or two of rest, is sufficient. The progress is favorable, most cases making a rapid and complete recovery. In the more severe cases, if the animal becomes quiet after 12 to 30 hours, with regular, not much quickened pulse, the appetite returns, and the animal lies a large part of the time upon his chest; recovery may be looked for, although the animal may be unable to rise for five or six days.

"When the animal continues restless and weak, will not lie upon the chest except when held, refuses food almost entirely, the pulse becomes weaker and quicker, with considerable elevation of temperature, the case is to be considered a very grave one."

Paralysis.

"The horse is taken suddenly, falls down, and is unable to rise. Sensation almost completely lost in posterior extremities. No increase in the pulsation; temperature will be found at 102 to 103. The usual remedy is to give a sharp cathartic, (see "Physicking") and have the animal placed in slings. Next apply stimulating embrocations to the spine, and give one of the following balls every eight hours:—

1 oz. alcoholic extract belladonna,
4 oz. bromide potass,
Liquorice root sufficient to make into six balls for the first stage.

"This treatment should be persisted in for the first four days, thoroughly bathing the animal's hind quarters with mustard water, and keeping up the stimulants to the spine until sore. The application of a fresh sheep skin or a hot salt bath to the loins would be still better.

"There is another difficulty which resembles spinal paralysis, namely Azotaria. (Treatment for which is given under that head.) As in the first case, the animal drops, and loses all power to get up.

In spinal paralysis there is a loss of sensation and a constant dribbling of urine, and involuntary fœcal passage. Temperature 102 to 103. No perceptible change of color in urine. In Azotaria the animal has suddenly partial loss of sensation, the urine and fœces not voided. No perceptible rise in temperature. The urine, if withdrawn from the patient, will be of a coffee brown color. The animal is uneasy struggling and sweating over the flanks, and in great pain.

"This difficulty is usually found in short-necked horses that are fed too much grain. Scarcely ever find horses in moderate condition subject to it."—*Dr. Meyer.*

Tetanus, or Lockjaw.

This disease is wholly of a nervous character, being a peculiar

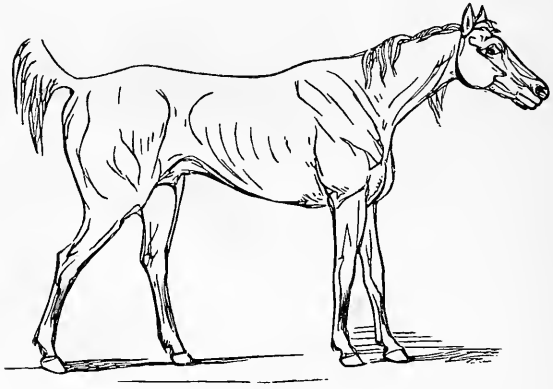


Fig. 802.—The symptoms of lockjaw.

irritability of the nervous system, inducing constant spasmodic contraction of the voluntary, and after a time the involuntary, muscles, and is very fatal unless treated skillfully and carefully. It is more common in the extreme South, than in the north ; and is more liable to occur during the warm months than in the cold ones.

Symptoms.—In the first stage there is a disinclination to move ; then the tail becomes erect and quivers, the ears set back, and the conjunctiva is thrown over the pupil of the eye, and the head is elevated, with the muzzle and facial muscles contracted, the nostrils open, and the whole expression of the countenance haggard and excited, evincing great suffering. (A good idea of which is given by Fig. 802.)

As the disease advances, the muscles all over the neck and body become stiff and rigid, and the legs have the appearance of of a four-footed stool. The animal has little or no power to move.

For the first few days the teeth remain apart, but as the disease advances, the muscles of the jaw become so contracted as to bring them close together. Hence the name locked jaw.

The bowels are constipated, the urine scanty, and passed with difficulty. The pulse is usually not very high, but is easily raised by excitement; he is very nervous, starts and quivers when any one approaches him. His appetite remains good, and from inability to feed, his hunger amounts to starvation; he will make every effort to suck up gruel or fluids, when, from the fixidity of the jaws, he is unable to masticate. The breathing, at first not much altered, becomes difficult and loud. The symptoms generally reach their climax about the third or fourth day.

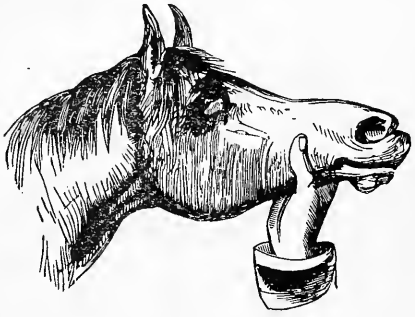


FIG. 803.—A test for lockjaw.

The Causes of this disease are numerous. It commonly occurs in consequence of wounds, when it is called *traumatic* tetanus; in which case it is not developed until about the period the wound is considered healed; it may occur from causes not apparent, when it is distinguished as *idiopathic* tetanus; but it is generally produced from a wounded nerve or bunch of nerves, pricking the tail, and very often from docking, punctured wounds in the feet from glass or nails, and sometimes from severe exposure to cold, and "I have known one case to occur from fright."—(Somerville.) Worms and other intestinal irritation sometimes give rise to it. The pulse is almost normal for the first few days. As the disease advances, the pulse quickens, and the animal is compelled to stand on his legs until death, if it terminates fatally. If favorably, a relaxation of the muscles begins from the fifth to the seventh day.

Treatment.—First, as the disease is of a nervous character, quietness is of the greatest importance. The animal should be removed to an isolated place, or cool, dark, roomy loose-box, by

himself, and the cause of the disease found. If from docking, the next joint should be taken off the tail. If from a wound in the foot, the wound should be opened up and made new, and an application of digestive ointment inserted, so as to produce a healthy flow of matter. Or, as soon as opened up, diligently foment with warm water, after which cover with belladonna, and apply poultices of linseed meal and opium or hyoscyamus to soothe and allay the irritation, and give promptly at the same time a strong purgative, such as

7 drachms aloes (Barbadoes),
2 drachms calomel,
given in solution or ball, as most convenient.

Injections of alkaline solution of aloes should also be given, as it is of the greatest importance to get the bowels open early. Belladonna in half-drachm doses should be given four or five times a day. If it cannot be given otherwise, place it up in the cheek, when he will suck it up.

He must be kept perfectly quiet, and the box cool and dark, no one being allowed to go near him but the attendants, and they must work about him noiselessly. A newly-flayed sheepskin should be laid over the loins, and well covered up to excite perspiration. Very high authorities claim that blisters and other irritating treatment must be avoided. He must be treated as in a nervous fever, while average good authorities advise having the spine rubbed well with a strong liniment such as one part aqua ammonia, two parts of sweet-oil; to be repeated daily until the back becomes sore. He should be allowed all the nutriment he will take; and when he cannot eat, sloppy drinks of linseed tea, barley water, well boiled oat meal gruel, etc., should be frequently placed within his reach.

It may run its course in four or five days, or it may continue for one or two weeks. It very often proves fatal.

Dr. Macbeth, of this city, who has had excellent success in the management of this disease, informs the writer that he has recently had two very severe cases, both *idiopathic*. The worst, owned by W. M. Merritt, of this city, had run four days, with jaws entirely fixed, before being called. His treatment is, first sharp cathartic, aloes, with enemas to encourage action of bowels, with half-drachm doses of belladonna, in some cases even more;

in this case, being a very desperate one, he gave drachm doses of solid extract, every three to four hours, with counter irritation over the spine, and generous nourishment as described.

He of course found great difficulty in giving the medicine, being compelled to push the aloes up into the mouth with a piece of stick, until a sufficient amount was taken up to produce a free action of the bowels.

Rabies, or Madness.

This dreadful malady is, providentially, of rare occurrence, and does not arise spontaneously in horses, but is usually the ef-

Fig. 804.—Symptom of rabies.

fect of the bite of a "mad dog."

Symptoms.—The attack is usually sudden, as it is severe, and seldom extends beyond the third day. It usually appears from two to eight weeks after the animal has been bitten. Sometimes it comes on gradually; he is observed to be dull, and his manner is peculiar. The other animals in the barn-yard seem afraid of him; he is observed to snap and bite at poultry, pigs, sheep, or other horses when roused, then relapses into his dull state again. In a short time his eyes become staring, wild, and excited; and he runs at anything that comes in his way.

At other times it comes on suddenly, with all the fury of genuine madness; he becomes wild and frantic, bites and tears at everything within his reach; he rears up, kicks and plunges,

presently gets down, gnaws at his own legs or sides, snaps at anything that is pushed towards him, gets up and runs with open mouth at any one who goes near him; palsy of the hind legs is apt to supervene; thirst is excessive; and the act of swallowing apparently difficult.

Treatment.—According to all medical authorities, curative treatment is hopeless, and they advise that the important point is to prevent it. When an animal is known to have been bitten by a mad dog, a string should at once be tightly tied above the injury, and the bitten part cut out or burned with the cautery or nitric acid, and some stimulant, such as good brandy, freely given; the same treatment is applicable to all animals.

A RECIPE FOR ITS CURE.

When in Southern Pennsylvania a few years ago, it became known to me that there was a recipe that had been used in that neighborhood for years, which was claimed to be a certain cure for hydrophobia. It had been kept a great secret by the man who used it, who, upon dying, gave it to his sons. These going into the army, one of them was seriously wounded, and, with his brother, who was sick with fever, was confined to the hospital at Washington. Their condition being serious, the citizens of the town, Hanover, valuing the recipe so highly, and fearing it would be lost in the event of their death, appointed a committee to go to Washington and obtain the recipe, when it was published in the county papers. Learning of its value, I made a great effort at considerable expense to obtain it, and was only able to get it by paying for it liberally.

Some time afterward, in stating the facts to Mr. Warren, he claimed to have a remedy that he *knew* to be specific for hydrophobia ; that he had used and seen it used for over twenty years, upon a variety of cases with perfect success; but having pledged himself not to reveal the secret, I could not obtain it of him. He finally said if I would let him see mine, if it were like his, he would say so. I read it to him, when he admitted it was an exact transcript of his. This added greatly to its value in my estimation, as Mr. Warren is among the most honest, conscientious men I ever met. The recipe I here give, with Mr. Warren's statements of the facts at the close:—

"Dr. Stoy's Celebrated Cure for Hydrophobia.—The following remedy for hydrophobia, published in the *Hagerstown Torch Light*, of 1830, by "Humanitas," we know to be genuine. The gentleman who purchased it from the late Mr. Kreps, is still living, and his son, for whom it was purchased, who had been bitten by a rabid dog, and exhibited strong symptoms of hydrophobia, is also living, thirty-seven years having elapsed since the event. We know, says the *Torch Light*, both gentlemen very well, and the manner in which the recipe was made public. It should, therefore, by all means be preserved by all those into whose hands this paper may fall.

"*Recipe.*—Take of the red chick-weed (*herba anageiis ruber*) that has beed dried, one handful, pour two quarts of good beer on it, and boil it in a new earthen pot (the pot must be covered with a close lid until half the liquor boils away,) it must be boiled over a slow fire; the vessel in which it is boiled must be kept very clean, and used for no other purpose. When the herb is boiled enough, it must be strained through a clean cloth and well squeezed, so that the substance may be all taken out of it; then add to the decoction two drachms of the best threriaca venti. It must be well dissolved and mixed with the decoction. Of the above decoction, give to a man or beast in the morning, fasting, the following proportions: A man of strong constitution must take a pint of it, and that at one time if possible, if not at once, take it at short intervals, but if taken at one draught, it is best. If there should be any symptoms of madness, the medicine must be taken two or three mornings in succession; but if actual symptoms of madness should exist, a larger portion of the herbs should be added to the said quantity of beer. A woman should take less of the medicine than a man, say about 3 or 3½ gills; for children the medicine must be regulated according to their age and constitution. It must be likewise observed that children can bear more of it than grown persons in proportion.

"The mother or person that nurses the child should take an extra portion; if the child would receive one or two spoonfuls of the medicine, it would be sufficient. A horse should be given one pint; a cow, 20 tablespoonfuls; a heifer or dog, according to age, size, and strength, the medicine to be taken warm and well-shaken. It must be taken in the morning, and fast must not be broken for 3 or 4 hours after taking it. No cold or fresh water must be taken, otherwise serious consequences might arise. On the day of taking the medicine, the person must abstain from spoon victuals, particularly from milk or warm beer. A beast must not be watered on that day; and a person must for two weeks abstain from the following eatables; viz., meat and pork of all kinds, cabbage, peas, beans, fish, or water fowls. If a person is bitten through the skin, the wound must be scratched with a chip until it bleeds, and washed with some of the decoction; this may be done for two or three days. If the wound requires dressing, make a plaster of the threriaca venti (venice treacle) twice a day until the

wound is healed. Observe that before dressing, the wound must be washed clean with the decoction. After having made use of the medicine, the person must put on clean linen, and change his clothes and bedding, and it must not be worn until perfectly clean. All straw that a beast has lain on must be burnt, and the stable cleansed."

"In 1862, I bought the same recipe as the above from John Emory Esq., residing near Baden Co., Waterloo, Ont., Canada, with conditions of secrecy until Mr. Emory himself should publish it. But finding that Prof. Magner has the same recipe, and is about to publish it for the benefit of the public, I feel myself relieved from the obligation of secrecy, and for the benefit of any who may need the medicine, I cheerfully add my testimony to its efficacy. I have given it both to persons and animals that had been bitten by rabid dogs with unfailing success, and Mr. Emory has been noted for many years in the central counties of Ontario for his success in curing those who had been bitten. I also met a regular physician in Reading, Besks Co., Penn., who had the same recipe. He prized it highly, and kept it as a secret. The public may rely upon it with perfect confidence as a remedy for the bite of any rabid animal. If the recipe could not be otherwise obtained, I consider it well worth $500.00. ALEXANDER WARREN,

Baptist Minister,
Acton, Halton Co.,
Ontario.

"Mountain Park, April 9, 1881."

The following, for the cure of hydrophobia, which has been published in the *Country Gentleman*, seems so good that I give it a place:—

"I can give some facts which may be of use to somebody, thereby saving life. The time between the biting of an animal by a mad dog, and showing signs of hydrophobia is not less than nine days, but may be nine months. After the animal has become rabid, a bite or scratch with the teeth upon a person, or slobber coming in contact with a sore or raw place, would produce hydrophobia as soon as if he had been bitten by a mad dog. Hydrophobia can be prevented, and I will give what is known to be an infallible remedy, if promptly administered, for man and beast. A dose for a horse or cow should be about four times as great as for a person. It is not too late to give medicine any time before the spasms come on.

"The first dose for a person is 1½ ounces of elecampane root, bruised, put in a pint of new milk, reduced to one-half by boiling, then taking all at one dose in the morning, fasting until afternoon, or at least a very light diet after several hours have elapsed. The second dose same as first, except take two ounces of the root; third dose the same as last; to be taken every other day. Three doses are all that is needed, and there need be no fear. This, I know

from my own experience, and know of a number of other cases where it has been entirely successful. This is no guesswork. Those persons I allude to were bitten by their own dogs that were bitten by rabid dogs, and were penned up to see if they would go mad. They did go mad and did bite the persons.

"This remedy has been used in and about Philadelphia for forty years and longer, with great success, and is known as the Goodman remedy. I am acquainted with a physician who told me he knew of its use for more than thirty years, but never knew of any case that failed where it was properly and timely administered. Among other cases he mentioned one where a number of cows had been bitten by a mad dog.

"To half of this number they administered this remedy, to the other not. The latter all died of hydrophobia, while those that took the elecampane and the milk showed no signs of that disease."

Stringhalt.

This is a peculiar jerking or pulling up of the hind legs when walking or trotting, familiar to every one. It is most severe during cold weather when the horse is led out of the stable, also after a hard drive, and is much better when driven and warmed up. Many horses that have but a slight touch of it may move off showing so little evidence of it as to escape notice. If suspected, back the horse up hill, especially after standing awhile, or when cool, and he will show it most clearly.

It is claimed that colts suffering from worms, and horses suffering from derangement of the digestive organs, will show some temporary jerking of one or both hind legs, from which they recovered under good keeping and mineral tonics. The writer has never known a case of stringhalt to be cured. There are a great many theories and pretended cures, but I know of none worthy of mention.

Thumps, or Spasmodic Action of the Diaphragm,

Commonly called thumps, is caused by severe and long-continued driving and hard work. Horses of a nervous temperament having too much cold water given to drink on a cold morning, nervous irritation, severe work or excitement from any cause, may excite this trouble.

Symptoms.—A sudden jerking or twitching of the muscles of the sides and flanks; pulse wiry, quick, and low; more or less fever; extremities natural.

Treatment.—This disease being of a purely spasmodic character, but in this case wholly of a nervous nature, bleeding must be omitted, and must be treated wholly by giving spasmodic remedies. Give assafœtida, in a dose of from 1 to 3 ounces of the tincture, mixed in a half pint of water. Given as a drench, will stop it almost instantly.

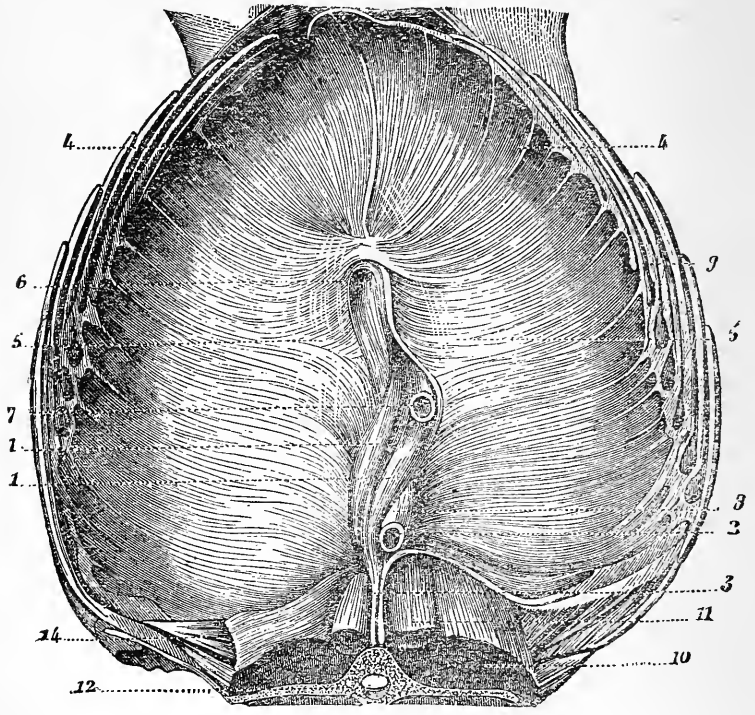


FIG. 804.—Diaphragm.

1, 1, The two portions of the right pillar; 2, Left pillar; 3, Tendons of the pillars; 4, 4, Peripheral muscular portion; 6, Posterior vena cava; 7, Œsophagus passing through the opening in the right pillar; 8, Posterior aorta between the two pillars; 12, Section of a lumbar vertebra.

If necessary, the medicine may be repeated in two hours. Keep the horse well clothed, and keep all exciting causes away from him. The bowels should be kept loose and regular, by giving bran mashes and moderate exercise.

Lymphangitis.—Weed.—Monday Morning Leg.

This disease is attributed to high feeding and insufficient exercise, generally working horses, those having worked steadily are suddenly kept standing in the stable for a few days, given all they can eat, when on a morning the animal will be found lame. This usually occurs in dray horses; the owner comes in late Saturday night; feeds. On Sunday, gives an extra allowance, enough to last all day; the horse eats all. Perhaps the owner does not come again until the following day, when he finds his horse is unable to back out of the stall. For this reason the disease is called by some Monday morning leg. It usually affects one of the hind legs, and is an inflammation of the lymphatics. The left leg is usually affected.

The leg is swollen, is favored and held from the ground; the swelling extends on the inner side from the foot up to the body. There is heat, and great tenderness to the touch. Horses that have once been attacked by lymphangitis are liable to a recurrence time after time, until the limb assumes permanently an enlarged condition.

Treatment.—Clothe the animal warmly and give a moderate purge, and bathe the affected limb with very hot salt water 3 or 4 times a day. After each bathing, apply the following lotion:—

2 ounces tincture arnica,
1 pint water.

Feed no oats or stimulating food, simply bran mashes, to which add plenty of salt; after the third or fourth day feed one of the following powders morning and night.

2 ounces iodine of potass.,
1½ ounce bicarbonate of potass.,
3 ounces powdered gentian root.
Mix and make into 10 powders.

In 8 to 10 days, when the symptoms have disappeared, if any swelling remains, there being no pain, apply for a few times an ointment.

2 ounces mercurial ointment,
1½ ounce iodine ointment,
4 ounces vasaline.
Make into a salve.

The Peritoneum.

The peritoneum is the thin serous membrane which lines the cavity of the belly, and is reflected over the organs contained within it, forming a complete covering to them. It also suspends and retains them in their proper relative positions by its folds and reflections, vulgarly known as the caul (omenta). This membrane also secretes a delicate serous fluid, for the purpose of lubricating the surface, so as to prevent friction during the ceaseless motions of the viscera. It is also the matrix over which the blood-vessels are distributed to the organs contained in the belly; hence the inflammations of these organs are apt to extend along this vascular-investing membrane, constituting peritonitis.

Peritonitis.

Peritonitis occurs in two forms, acute and chronic. Acute peritonitis, as a primary disease, is not very common in the horse.

Causes.—It is usually caused by external violence, as from being hooked by a cow's horn, or staked in jumping a fence; it also sometimes follows castration, operations for hernia, and other operations involving a division of it, and occasionally from exposure to damp and cold, especially when heated.

Symptoms.—It usually sets in with shivering fits, general uneasiness in the region of the abdomen; quick, short breathing; pulse quick, small, and wiry; tenderness on pressure on belly; lying down and rising frequently; he moves about uneasily in his box, and is very feverish; the bowels are costive, and he strains occasionally. The pain is not so violent as in colic or inflammation of the bowels, for which it is apt to be mistaken.

Treatment.—Relieve the bowels by injections, give a brisk purgative, as six drachms of aloes, with a drachm of calomel. Drachm doses of extract of belladonna or hyoscyamus, should be given every hour, for three or four doses; or tincture of aconite, from fifteen to twenty drops every two hours, in a little cold water, till the fever is subdued. Apply smart counter-irritation to the whole surface of the belly by rubbing in a strong liquid blister. The treatment of peritonitis does not differ very materially from that of enteritis, inflammation of the bowels, which see.

The Stomach.

The stomach is that pouch or bag into which the food passes from the gullet, and in which it undergoes the primary and essential changes in the process of digestion. The stomach of the horse is a comparatively small organ; its shape is generally compared to the air-bag of a pair of bag-pipes. It has two openings, the *cardiac*, into which the food enters from the gullet, and the *pyloric*, through which it passes into the bowels, or gut. Its inner surface is lined by two distinct membranes, a *cuticular* and a *villous*. The former lines the cardiac portion, and is white and wrinkled; the latter covers the pyloric, and is yellowish red, soft and velvety to the touch. The latter is the true digestive stomach. In it the gastric juice is secreted, and the essential process of chymification, or the formation of the food into chyme, goes on, the former being merely for macerating and further triturating the masticated food.

Indigestion.

Indigestion in one form or another is very common in the horse. It occurs in two forms, which may be distinguished as acidity of the stomach, or heartburn, and acute indigestion, or total arrestment of digestion.

Acidity of the Stomach.

Acidity of the stomach arises from bad food and irregular feeding.

Symptoms.—The animal is observed to lose condition ; the skin is dusty and unthrifty; he is continually poking and picking among the litter, licking out the corners of the manger, occasionally stretching out the nose, and pouting the upper lip. If turned out, he licks earth or sand, and evinces a depraved appetite ; at work he is easily sweated; his bowels are irregular, the dung being light-colored and glazed.

Treatment.—Change the feed, give sweet, well-cured hay, a few bran-mashes, and gentle walking exercise. Give him the following laxative ball :—

6 drachms Barbadoes aloes,
2 drachms ground ginger,
2 drachms carbonate of soda.

Make into a ball with molasses or lard.

Place a lump of rock salt in his manger, and give a little carbonate of soda or magnesia twice a day in the feed. When recovery begins, give him tonics for some time, with gentle exercise. If he persists in devouring the litter, muzzle him up for a few days. This, if neglected, is apt to run on to diabetes or jaupis.

Acute Indigestion.

Acute indigestion is very common in this country, especially in the spring, from the continuous hard work, and necessarily liberal feeding. It is usually induced by overfeeding, that is, eating too much at a time, more especially when the animal has been fatigued and hungry. It sometimes occurs from his breaking loose in the night, and gorging himself at the corn-bin. Another frequent cause is overloading the stomach with clover or green feed when wet; this often induces violent and fatal indigestion.

Symptoms.—Digestion may be arrested, either by "the food undergoing no change, forming a dangerous load, or running rapidly to frightful fermentation." In the former case the animal is dull and stupid, the pulse is slow, and the breathing oppressed; he is stiff, and inflammation of the feet, or *acute founder*, is apt to set in. If he have access to water, it speedily sets up fermentation, gas being rapidly evolved; the stomach is greatly distended, the belly swollen, colicky pains set in, he rolls about in great agony, looking wistfully to his flank, kicking his belly with his feet; he tosses about in despair, the bowels being unmoved. He gets up and down frequently, the sweat rolls off him in streams, and in many cases death puts an end to his suffering in from four to six or eight hours, caused by rupture of the stomach or bowels, or violent inflammation of the intestines.

Treatment.—It is more easily prevented than cured, by simply attending to the following rules: Never let a horse get too hungry; never give him too much at a time; never put him to work on a full stomach; and never let him drink too freely after eating, and we will seldom see this fatal disease.

Treatment must be prompt to be effectual. The following drench will be found useful:—

8 drachms Barbadoes aloes,
1 fluid ounce liquor ammonia,
Or, 2 fluid ounces spirits of turpentine.

Dissolve the aloes with a little carbonate of soda, in nearly a quart of warm water, and add the other.

Rub the belly well, and apply cloths wrung out of boiling water diligently to it. Give copious injections of soap and water; or a mild infusion of tobacco or tobacco-smoke. If no relief is given in one or two hours, give at intervals of an hour, two drachms carbonate of ammonia, ½ ounce ginger (powdered), in gruel.

Advantage will sometimes be found from giving copious drenches of fluids to liquify the contents of the stomach, and assist in removing it.

The Foot.—Pricking in Shoeing, Stepping on Nails Glass, etc.

The foot is made up of the coffin-bone, (os pedis,) the lower end of the small pastern-bone; (os coronæ,) and the navicular-bone (os naviculare,) with the tendon of the flexor pedis, which passes over the navicular-bone, and is inserted in the sole of the coffin-bone, a variety of illustrations of which I give. The surface of the coffin-bone is covered by laminæ or thin plates, running from above downwards, fitting into corresponding plates on the inner surface of the hoof. The sole is also covered by a sensitive structure which is villous, that is, presenting elevations and depressions, which fit into reciprocal horny villæ on the sole of the hoof. At the back part of the sole we have the sensitive or fatty frog, covered in a similar manner by the horny frog. These, with the coronary ligament (which occupies the groove in the upper margin of the wall of the hoof, and from which the hoof grows), and the coronary frog-band, blood-vessels, nerves, and lymphatics, constitute the foot of the horse. (To make this more plain, I include drawings of different views of the hoof; reference can also be made to illustrations in Shoeing.)

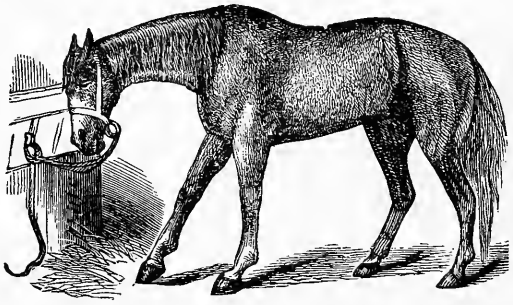


Fig. 805.—The horse as he usually rests the foot when lame.

Accidents and injuries of the foot constitute the principal causes of lameness. It is liable to injury from various causes, as occasionally participating in constitutional derangement; but by far the greatest amount of injury arises, directly or indirectly, from shoeing.

FIG. 806.—Showing bones of the foot.

Sometimes, from carelessness, a nail penetrates the sensitive part of the foot (usually called the quick). Sometimes the nail itself does not penetrate, but is driven so close as to cause the wall, in its course, to press on and bruise the quick, (something like Fig. 807,) giving rise to inflammation, and usually terminating in suppuration. To illustrate, a fine horse that had been lame for a number of days was recently brought in from the country to be examined by the veterinary surgeon here, who informed the writer that upon investigation, he found that the lameness was caused by three nails being driven too near or into the quick.

Serious trouble is also liable to be caused by driving the nails deep and clinching them tightly, as this will bend the nails more or less inward upon the soft parts, causing a binding, uncomfortable pressure that produces a soreness, and sometimes very serious inflammation.

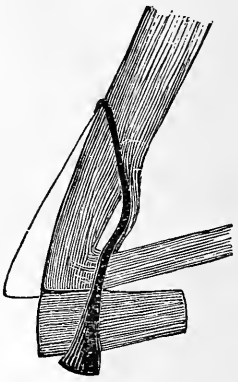


FIG. 807.

Symptoms.—Lameness may appear in a day or two, sometimes not for a week. The foot is found to be hot and tender, and the least tap with the hammer causes pain; in moving, the animal sets the foot down so as to throw the pressure off the tender part, and when standing he will rest the foot. Sometimes, the leg swells considerably; the swelling is sometimes painful, and is very apt to mislead the inexperienced.

Treatment.—Remove the shoe, and having with the hammer or pincers discovered the faulty nail, thin the sole around it, and

with a fine drawing-knife follow the course of the nail till the matter is evacuated; make a free vent for it, and immerse the foot in a warm poultice for a day or two. When the symptoms subside, the shoe may be applied, and the sole filled with tow and tar, or Friar's balsam, tincture of myrrh, etc., retained by cross slips or a leather sole, care being taken not to bruise the sole. The crust at the injured part should not rest on the shoe. (For farther details, see page 667 in Shoeing.)

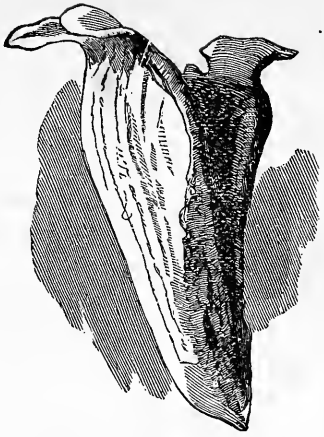


FIG. 808.—The frog removed from the hoof (Fig. 809) by maceration.

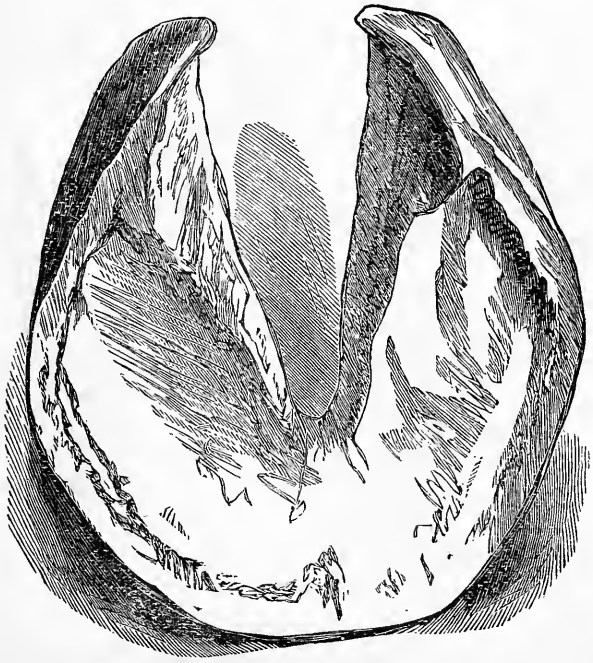


FIG. 809.—A dried hoof with frog removed. From *Gamgee*, on Lameness.

If the nails are driven so deep as to bind, which, as before stated, is a very common occurrence, particularly in feet with thin hoofs, the first thing to do is to remove the nails; if much inflammation, poultice until relieved; then let the shoe extend farther out under the crust, and drive smaller nails, using care not to drive deep.

If a nail has been driven into the foot, get the horse to the stable as quick as you can, and take off the shoe. If not done before,

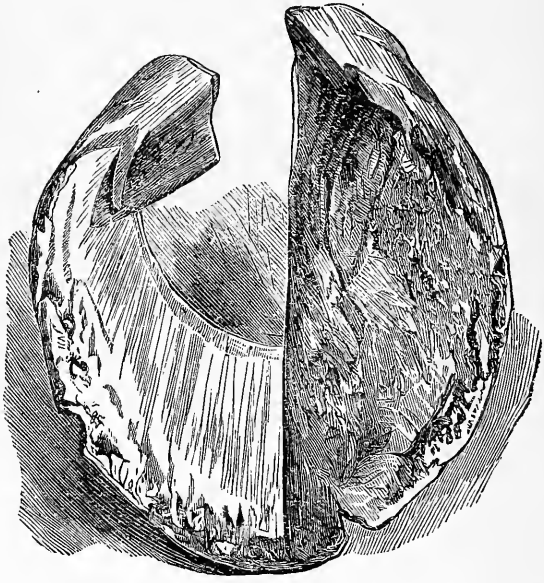


FIG. 810.—A dried hoof from a diseased foot, with frog and half the sole removed.—From *Gamgee*, on Lameness.

remove the nail, glass, or whatever it is, from the foot carefully. See that no part remains, and remove a little of the hoof from around the opening. Drop a few drops of Friar's balsam or compound tincture of benzoin into the orifice, both of which can be obtained in almost any drug store. If this is not obtainable, use the simple digestive ointment (given under head of Cuts), and cover the foot with a large flax-seed poultice. If the injury is at all severe, give a sharp dose of physic, and let the animal stand quiet. The object is to keep down inflammation. *No hot oils or anything stimulating is to be applied.* If there is much in-

flammation, omit digestive dressing until after it is reduced by poulticing, when dress with digestives.

There is liable to be tenderness if the sole should strike the ground afterwards, as there may be inflammation of the periosteum, to relieve which, put on a high-heeled shoe, and blister around the coronet. The sole is sometimes bruised by the shoe pressing upon it, causing much inflammation and lameness. Take off the shoe, poultice for twenty-four hours or more; fit the shoe so as to remove all pressure from the sole; if sore yet, continue the poultice; if matter is formed, treat as you would any simple ulcer, with a healing astringent. Several good preparations are given in another part of this work.

Foot-Lameness.*

"**Symptoms.**—Horse goes gradually sore, walking tender either behind or before. As a rule comes in one foot; if in the hind foot, tries to put the heel down first. Not much fever in the feet. No apparent cause, hard to locate the trouble. The only diagnosis is by tapping the wall of the foot which will give a hollow sound. It is all due to want of cell-growth or nutrition of horn-cells which will cause the wall or hoof to separate from the true foot. At the start the horse may travel sore or tender, growing worse gradually for two or three months; finally the horse becomes very lame. There is no fever; no pain by pressure or hammering. The only point noticeable is by the hollow sound of the wall when hammered upon.

"By examining the sole of the foot at the point where the sole and wall are united, by pricking there with a probe a granulating substance will be found—little dry fibers of horn, which are the dead horn-cells. These can be found and pricked clear up to the coronary band, without causing any feeling to the horse.

"**Treatment.**—Clean out the foot properly, and pour nitric acid into the crevice made until all the dead part is cleaned out. Then put on a plain shoe so as to protect the sole and wall; fill out the bottom with oakum and hot tar; next fire all around the coronary band, the same as for ring-bone, and apply a sharp blister, and allow the horse to stand five or six weeks. If by the third week there is no sign of healthy horn, the blister may again be applied. But there is usually after three or four weeks a good noticeable growth of healthy horn.

"After this, but little more can be done than to exercise the horse moderately, until the new growth of horn-structure has grown down."

*Dictated by Dr. Charles A. Meyer. 60

Seedy Toe.

This is the name given to a dry, mealy secretion of horn, which is sometimes seen to take place between the horny and sensitive sole at the toe. It is seldom seen in this country, owing to clips being not much used.

Causes.—It is generally caused by large clips being hammered firmly on the toe, bending in the hoof, and bruising the part.

Symptoms.—Pain and lameness, with heat and tenderness, on pressure at the toe. The horn is dry and mealy, and matter is generally found at the bottom of it.

In bad cases, horny processes are found pressing inward, producing absorption of the coffin-bone, with a tendency for fungus growths to shoot up, producing a very troublesome disease.

Treatment.—In a simple case, open it up, cut down to the bottom, and poultice for a few days, when the shoe may be applied, removing the pressure by cutting down the crust, and fill it up with tow and hot tar, when it well soon get well.

In bad cases, with fungus and bony absorption going on, free incisions must be made ; sometimes it will be necessary to cut through the wall. Caustics must be freely used, such as muriate of antimony, dilute hydrochloric acid, etc., with pressure judiciously applied ; the process may be arrested, and the part healed.

When there is want of cell-growth, with a separation of the wall from the inner structure, which is very common in horses that have been driven hard, or been partially foundered, another high author advises the following, which is practically the same as that given for foot-lameness:—

"**Treatment.**—Thorough and repeated blistering around the coronet. Next pour boiling hot tar or even corrosive substance, such as muriatic acid, butter of antimony, spirits of salts, etc., into the cavity formed.

"Whenever there is a separation of the wall from the sole, with weak or slow growth of horn, this is effectual if there is any life in the parts."

In severe cases, as first explained, the firing iron is necessary, first cleaning out the dead part and filling in with hot tar, etc.

This is added in order to give a little more extended idea of the method of treatment.

Gravelling.

A small stone, gravel, or dirt becoming imbedded under the shoe at the point of the heel between the bar and frog, usually the inner heel, and working through the sole into the quick, is called gravelling. If not removed, it will in time work up through the coronet, or cause matter to form which will burrow between the wall and sensible sole.

The horse shows more or less lameness on the trot; is aggravated when driven over hard ground or trotted fast. If not interfered with, the lameness continues for about three months, when the gravel usually works through the coronet, making a small break in the skin, after which the lameness disappears; but should the matter be confined to the sole and surrounding parts, it is liable to cause considerable disturbance and injury to the foot.

When a horse shows lameness without any apparent cause, this part should be carefully examined, 1st, to discover if the sole is broken at the point of the heel; 2nd, by slight tapping against the wall of the part with a small stone or hammer, to find if there is any unusual sensibility; 3d, by resting the hand gently upon the part, to see if there is any increased heat, which would of course point to the seat of trouble. Sometimes gravel works into the sensitive part in consequence of the sole being denuded to relieve a bruise or corn. The point is to remove the cause of irritation. If much inflammation and pain, poultice; this will lower inflammation, and aid in soaking out and removing any foreign matter accumulated. When this has been done, saturate a pledget of tow with tincture of myrrh, or tar ointment, or Friar's balsam, and insert into the part, covering it completely. Next, fit a shoe so there will be no pressure upon this part, and nail on. It will usually be found necessary to put on a bar shoe until the heel is grown down again and will bear pressure.

Bruise of the Sole.

The sole is liable to bruise from the shoe being improperly seated, sometimes from sand or gravel being impacted in the web of the shoe, or by "picking up" a stone, which, getting wedged in the foot, bruises the sole.

Symptoms.—Lameness first attracts attention to it; in re-

moving the shoe, the sole is found tender, and the foot hot; on paring the sole, it is found discolored at the bruised part.

Treatment.—A few days' rest may be necessary, with the foot immersed in a poultice, or stopped with some emollient dressing; and by using a leather sole or felt pads for a short time, it disappears.

Treads, or Calks.

Injuries to the coronet are very common, especially in the Northern States during the winter months, when horses with sharp calks are driven or worked on rough, icy roads or deep snow, par-

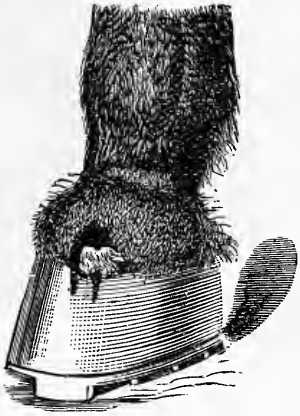
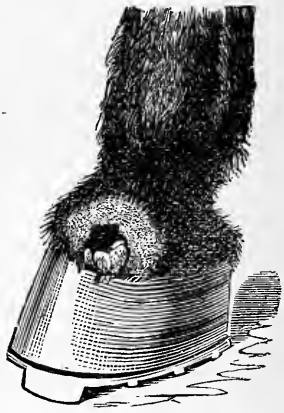


Fig. 811.—The coronet as it usually appears when badly calked.



ig. 812.—As the hair should be clipped from the edges of the injury.

ticularly in the woods. Treads, or calks, usually happen on the hind foot, by the horse accidentally setting one foot on the other, or another horse stepping on it. In ordinary cases, if not cut very deep, all that is necessary to do is to cut the hair from the edges, sponge or clean out any hair or dirt that may be driven in, and pour on a little kerosene oil, followed by a little hot tar, or the parts covered with hot tar will be sufficient.

But if the cut is deep, it will sometimes prove to be a very serious difficulty, and require prompt attention to prevent serious inflammation of the parts. The first thing to be done in such a case is to carefully remove any dirt, or other foreign matter. When thoroughly clean, it may be bound up with a pledget of

tow dipped in tincture of myrrh, or compound tincture of benzoin, or Friar's balsam, which, if available, will be found an excellent remedy. The point is now to prevent any excessive inflammation. Keep the horse quiet, feed bran-mashes, etc., no grain; and if there is enough inflammation to cause much soreness, cover the foot with a large hot poultice. If the soreness becomes at all excessive, at once use hot fomentations, following up for at least one or two hours three or four times a day; after which keep the leg tied up with wet cloths, or poultice. If there is extreme pain, give an anodyne, or inject a little morphine under the skin, as a horse cannot endure pain very long, and continue fomentations industriously; this, at all events, must not be neglected.

In very severe cases it may be necessary to put the horse in slings, if he will not lie down. When the inflammation subsides, but little more is necessary to be done than to let the parts alone, dressed with any of the preparations before given.

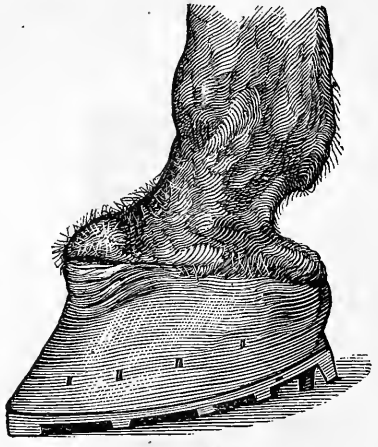


FIG. 813.—The usual appearance of a foot badly calked, and neglected or improperly treated.

To illustrate the seriousness of these cases sometimes, I will refer to an accident of the kind to one of my own horses. One of my men, who had special charge of and drove a favorite pony, took it into his head during the winter to have the calks pointed with steel and made very sharp. While the pony was standing in his stall, with one foot resting against the opposite, he was suddenly startled by some one approaching, when, throwing his weight upon the elevated foot, the inside calk was driven well into the coronet of the opposite foot. I was kept ignorant of the accident for several days, when it was made known to me by discovering the horse to be lame. The injury at the surface did not seem to be serious, but it was deep. In consequence of being driven on the road, the inflammation soon became so serious that it was necessary, at great inconvenience, to leave the horse behind a couple of weeks, the part in the meantime being thoroughly poulticed

Fig. 814. — As the foot was held during the greatest inflammation.

and fomented. The inflammation passing off, and being entirely free from lameness, he was again put to his work on the road, when the roads were breaking up. Driving him through the deep mud for a few miles, again brought on such serious inflammation of the parts as to necessitate a constant application of fomentations for hours at a time, night and day, for several days, to overcome it. Fig. 814 is an illustration of how he stood when he suffered most severely. I also give specimens of the usual method of sharpening the calks in winter, and as they should be rounded or filed

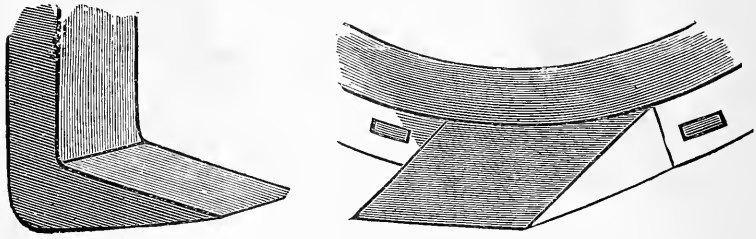


Fig. 815.—Calks as they are usually sharpened in winter.

to prevent serious injury. Owners should not neglect to look to this matter very carefully. The toe and inside calk especially

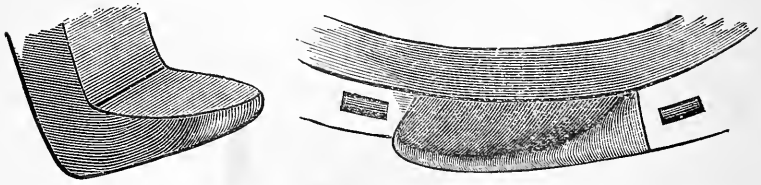


Fig. 816.—As the calks should be blunted or rounded to prevent cutting.

should be rounded sufficiently to prevent any serious cutting. Concave shoes should be used in winter; with such, calks need

not be long or sharp to give sufficient hold. Particular care should be taken not to have any calks or sharp shoes on when there is an effort to subdue a horse. This caution must not be disregarded, as a horse under such circumstances is liable to cut himself dangerously.

Overreach.

When a horse, in a fast pace, overreaches the fore with the hind foot, the inner rim of the shoe cutting a semi-circular flap on

Fig. 817—A good representation of an injury by overreach.

Fig. 818.—As the edges of the wound should be trimmed before dressing.

the heel or quarter, it is called an "overreach." It should be treated as a tread; but when practicable, the edges should be brought together by a wire suture, and bound up with Friar's balsam or compound tincture of benzoin.

Quittor.

In all cases in which matter forms in the foot, whether from pricks, corns, bruises, or treads, unless it has free openings to escape by, it acts as an irritant, extending in every direction, form-

ing tissues, and at last working its way to the coronet, where it bursts, producing a very troublesome disease, and requiring both patience and perseverance to effect a cure.

Symptoms.—It is recognized by the small aperture at the coronet, which seems almost overgrown with "proud flesh." The discharge is glary and constant. On examining it with a probe, sinuses are found running in all directions. The quarter is enlarged and bulging, and the lameness severe and protracted.

As I cannot do better than give the treatment used by Mr. Gamgee,* which is recognized as the very best, I will give it in full :—

FIG. 819.—An ideal representation of a foot showing bad condition of quittor.

"After taking off the shoe, and doing all that is necessary to the hoof, I prepare to inject a mixture, for the pharmaceutical combination of which I say nothing, though I can say a great deal for its practical efficiency. To prepare the mixture, take bichloride of mercury, one drachm; rectified spirit, one ounce; after rubbing and dissolving the sublimate in the spirit, add half a drachm of liquor plumbi acetatis. By means of a small syringe, elastic gum, or peuter, with small tube two inches in length, and bulbous end, I inject the mixture down the sinus. This requires to be carefully but very effectually done. The direction of the syringe must therefore be changed from the vertical to the oblique, in both a forward and backward direction, the object being to infiltrate the mass as far as it can be penetrated by the innumerable small sinuses converging to the outer channel. To do this part well, one strong man is better than several hands, if the horse's head be held steady, and an assistant hand the instruments, etc. I take the horse's foot forward upon my knee, and, as a rule, succeed in performing the operation without giving much pain to cause the horse to resist; though difficulty, requiring a little exceptional care, may occasionally occur when previous treatment and torture have been resorted to. Now for the effect that follows: The foot is released and placed on the ground, and once or twice the animal stamps, indicating that a

*Joseph Gamgee, formerly professor in the new Veterinary College, Edinburgh, Scotland.

smarting is produced by the caustic agent; but in a brief space of time that passes, and signs of ease are manifest. On examining the foot in as short a time as four hours after the operation, I have found the tumor sensibly subsided, and all the symptoms favorable. We have been in the habit (members of my family used this excellent remedy before me) of repeating the injection of the preparation a second time after the lapse of twelve to twenty-four hours, and again, after a similar interval, a third time. And this general rule seems to me to recommend itself, and admit of explanation in this way: At first all the structures are so engorged that the agent cannot be forced through the morbid deposit; but, in proportion as the diseased structures are reached, they are destroyed, and shrink, and in each succeeding application the fluid caustic is pressed round the withered, wasted substance, until the whole comes away in the space of a week or little more, when the cure is far advanced, and thereafter rapidly effected. This represents the progress of a good cure. Sometimes the application has to be repeated several times, at intervals of two or three days; but where delay is essential, I diminish the activity of the preparation by adding a double portion of spirit."

The following treatment for quittor, was given the writer by one of the most successful practitioners in the country, who claims it will cure any case, in fact, leaving nothing to be desired when used properly:—

"In the first stage of quittor inject into every part carefully two or three times a day the following lotion:—

½ ounce corosive sublimate,
2 drachms Goulard's extract,
4 ounces alcohol.

"After the fourth day inject twice a day equal parts of the following mixture:—

2 ounces potassa chloras,
1 ounce potassa permanganas,
½ ounce acid hydrochloric,
8 ounces water.

"This is a splendid thing for quittor, and also fistulas withers. Of late, I have great success with it."

A bar or three-quarter bar shoe, should be used for some time, and the diseased quarter cut down to keep it from pressure; and in the course of time the foot will become useful, if not sound.

Thrush.

Copying the language of a standard authority, "Thrush is inflammation of the lower structure of the sensible frog, during which pus is secreted with or instead of horn." It is most common in the hind feet, and also occurs in the fore. It occurs at all ages, and is frequently seen in the colt running in the straw-yard, arising from the acrid moisture of urine, dung, etc., softening and corroding the frog, and extending to the sensible structures above. It is also seen in roadsters whose feet are not exposed to acrid moisture. In them it is caused by contraction, or the insinuation of sand and dirt into the cleft of the frog, producing irritation, followed by suppuration of the sensitive frog, causing it to secrete unhealthy horn, and discharge offensive matters.

It may sometimes be constitutional, as we often observe it appear just as the coat is being changed, and other constitutional changes are taking place in the system.

Symptoms.—There is seldom much lameness, unless the animal steps on a stone, or sand or gravel gets into the cleft; but it is always attended by a tender, gingerly action. The cleft of the frog is deeper than in health, and a thin acrid discharge oozes from its sides and bottom, emitting a characteristic and fœtid odor. If not checked, it extends, and the frog becomes loose and ragged; scales fall off in layers, exposing the sensitive parts, which are tender and contracted. If neglected, the entire foot may be involved, and it may degenerate into canker.

Treatment.—No time should be lost, and no case, however slight, should be neglected. The foot must be thoroughly cleaned, and all loose, detached parts freely removed. The secreting surface should be exposed, and calomel dusted on, and pressed with a spatula or thin slip of wood into every crevice. Keep the foot thoroughly dry, and more than one or two dressings will seldom be required. Sometimes it readily yields to cleanliness and simple dressings, with hot tar placed in the cleft with tow, and retained with cross slips, or applications of sugar of lead or sulphate of zinc. Or, after the parts have been washed, and the diseased part removed as directed, apply powdered sulphate of copper to the parts, and fill up all parts with cotton packed in so as to keep out all dirt. If necessary, this should be repeated in a few days.

It is generally advisable to give some opening medicine, and attend to the general health and exercise.

Canker.

Canker of the foot is apt to supervene in cases of neglected or badly treated thrush, quittor, or puncture, and often follows bad cases of grease. It is most common in heavy draught-horses, that are kept in damp, filthy stables, and is most prevalent about large cities.

Symptoms.—In this disease we find a morbid state of the sensitive sole and frog, and instead of sound, healthy horn, fungus-excrescences are thrown out, with an offensive acrid discharge. When aggravated, the whole becomes covered with a growth of fungus, which are like shreds of leather in appearance, with a great tendency to spread over or underrun the sole, separating the horny from the sensitive parts. It is very difficult to get the horn to grow again.

Fig. 820.—The foot, showing canker.

Treatment.—In no case is so much patience required as in canker,—in fact, it is generally considered as incurable, from the difficulty experienced in suppressing the fungus, and getting the horn to grow again. All loose and detached horn must be carefully removed, so as to give free vent to the irritating matter. As much of the fungus as may seem practicable, without much bleeding, should be removed by the knife or cautery, and followed up by some escharotic, such as acetate or sulphate of copper, nitrate of silver, butter of antimony, or sulphuric acid. Whatever caustic is used, it must be applied every day; for if neglected for one day, it is apt to underrun the sole, and may lose more than it will regain in a week. Firm pressure is very beneficial, and should be constantly applied by means of tow, firmly impacted, and retained by means of slips of wood or hoop-iron slid under the shoe, and the foot must be kept perfectly dry.

The caustic may be occasionally changed. To destroy the fœtor, chloride of zinc or chloride of lime may be dusted on, or even occasional dressings of dry lime will be useful. With a dressing of tar, in which verdigris and nitric acid, two drachms

of each to one pound of tar, are well mixed, and applied with a degree of firm pressure, at least every second day, the worst cases can be cured.

Moderate work, if it can be done without the foot getting wet, will expedite the cure. The following is highly recommended as a dressing: Take equal parts of pine tar and lard, melt over a slow fire, and add sulphuric acid very slowly until ebulition (boiling) ceases. Apply this to the parts.

Sprains, Bruises, etc.

Sprains are so common, and so liable to spoil a horse when neglected or not treated properly, and in addition the treatment is so simple and easily applied, that the subject is worthy of more than ordinary attention. On this account I have introduced several illustrations, showing the parts involved in the fore legs, the parts most liable to such injury.

Sprain may be said to consist in an overstretching of the part (be it muscle, tendon, or ligament) to such a degree as to cause rupture of some of the fibres of which it is composed, in consequence of which inflammation is set up, and effusion takes place, producing enlargement around the part.

The reason why sprains take so long to recover is, the lacerated fibres have to be absorbed, and new ones formed in their place, or, as is often the case in repeated sprain of the same part, their place is filled up by organized lymph, leaving a permanent thickening.

Causes.—Natural weakness of the part sometimes predisposes to it. It may arise from whatever exposes the part to inordinate exertion, as, for instance, slipping on ice or on a rolling stone, awkward stepping, galloping on rough or uneven ground, and a common cause is, allowing the feet to grow too long.

Symptoms.—In severe cases the part is swollen, hot, and tender, the limb is thrown into a position that relaxes the sprained part. If extensive, we have symptomatic fever, and he refuses his food, has the mouth hot, pulse accelerated, etc., which passes off when the more acute symptoms subside. Lameness, of course, is continuous, thus differing from disease of the joint, in which he is always lamest at starting, getting less lame as he gets warmed up.

Treatment.—No matter where the location of the sprain is,

or what part is injured, the principle of treatment is the same, when we have three indications presented: First, to allay the inflammatory process; secondly, to promote absorption of the decayed fibres; and thirdly, to hasten the production of new ones. Most authors recommend either local or general depletion by bleeding from one of the large veins near the seat of injury, or from the jugular vein of the neck. This, however, I think is now-a-days very wisely dispensed with, and in my opinion is altogether unnecessary.

The bowels must be freely opened, and kept open by laxative and easily digested food, such as bran mash, linseed tea, roots, etc. The continued application of heat or cold to the part aids greatly in checking the inflammatory action. If pain and swelling are excessive, hot fomentations continued for an hour or two, alternated with cold water, will be found to give most relief. (For particulars in fomenting, see Fomentation.) Gentle and equable pressure, by means of a judiciously applied bandage, is very beneficial in sprains of the leg.

Rest must be given from the first, and the patient must be turned into a loose-box. Having by these means succeeded in subduing the inflammation, one or two applications of an absorbing blister will generally remove any enlargement that may remain. Should the thickening and lameness prove obstinate, the firing-iron may be resorted to. (An explanation of the method of doing which, see Firing in Spavins.)

Sprain of the Back Tendons.

The principal seat of sprain in the fore limb is in the tendons at the back part of the leg, usually called sprain of the back tendons, or back sinews. As these tendon (flexor perforans and perforatus) are the chief agents in producing the motions of the limbs, acting like levers over the pulley-like surfaces on the ends of the bones in their passage down to the foot, they are consequently very liable to be overstretched and strained, sometimes in a very slight degree, and sometimes to a considerable extent. It may be necessary here to notice the arrangement of these two tendons. The muscles (perforans and perforatus) arise from below the elbow-joint, pass down through a theca at the back of the knee; below the knee they become tendinous; the first is one

of great strength, nearly round, and is inclosed in the other, which forms what is termed a sheath for it; half-way down the cannon, the perforans is joined by a strong ligament (the metacarpal); the two tendons pass down together through a sheath formed for them at the back of the fetlock; the latter splits into two divisions, having the perforans passing between them; they are inserted one into each side of the lower pastern bone (or coronæ), the perforans, passing down, is inserted into the sole of the coffin-bone, just in front of the navicular joint, over which it passes. A good illustration of these different parts is given in Fig. 821.

A, Flexor perforatus.

B, Flexor perforans.

C, Metacarpa ligament.

D, Superior sesamoidal ligament.

d, Bifurcation of the sesamoidal ligament.

y, Continuation forward of branch of the sesamoidal ligament.

F, Continuation of the flexor perforans tendon, afterwards inserted into the lower side of the os pedis.

E, Extensor tendon.

M, Great metacarpal, or cannon shank bone.

S, Splint bone.

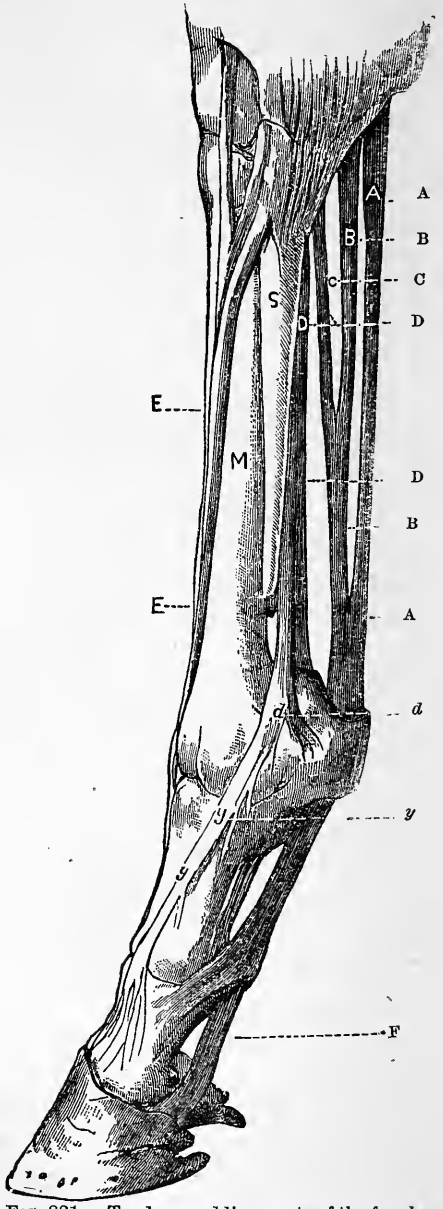


FIG. 821.—Tendons and ligaments of the fore leg.

Fig. 822 will be found an especially fine illustration of the perforatus and perforans tendons above the fetlock, an explanation of which is also included. A point here which is very nicely explained by White, who says:—

"Between these two tendons, there are in two parts thin vascular membranes by which they are joined together; these membranes appear to serve as bridles, allowing the perforans tendon to move a little way within the perforatus, and then preventing any further motion. The situation of those membranes is about midway in the pastern. If the coffin joint happens to be extended in a way the animal was not prepared for, both these membranes are ruptured. The consequence is an effusion of blood between the two tendons, whereby all motion between them would be effectually prevented, were the animal left to obey his own instinctive feelings."

In most of the so-called cases of clap, or sprain of the back tendons, the ligament, and not the tendons, is the seat of the injury.

Causes.—Whatever tends to throw unusual stress upon these parts may produce it, such as galloping on uneven ground, allowing the hoofs to grow too long, thereby increasing the leverage on the tendon; sometimes it occurs in leaping, often while jumping around in play.

Symptoms.—The animal is very lame, the part is hot, swollen, and tender; the limb is held forward, so as to relax the part; in some cases he can hardly touch the ground. On taking up the foot and pinching with the fingers, he evinces the pain he feels. If the outer tendon (perforatus) is injured, we have a bulging out behind, interrupting the evenness of the line which characterizes the tendons. If the perforans, it is felt between the ligament and the perforatus; and if the metacarpal ligament, as is most generally the case, it can be felt between the bone and the tendon.

Treatment.—As before stated, the first condition of cure is rest. The animal must be turned into a loose-box, and if the injury is severe, the swollen limb must be well fomented with hot water, cold may be preferable, if slight. This must be kept up for more than an hour, when the following cooling lotion may be well rubbed in, and a thick woolen bandage applied, well saturated with it, and kept wet with cold water:—

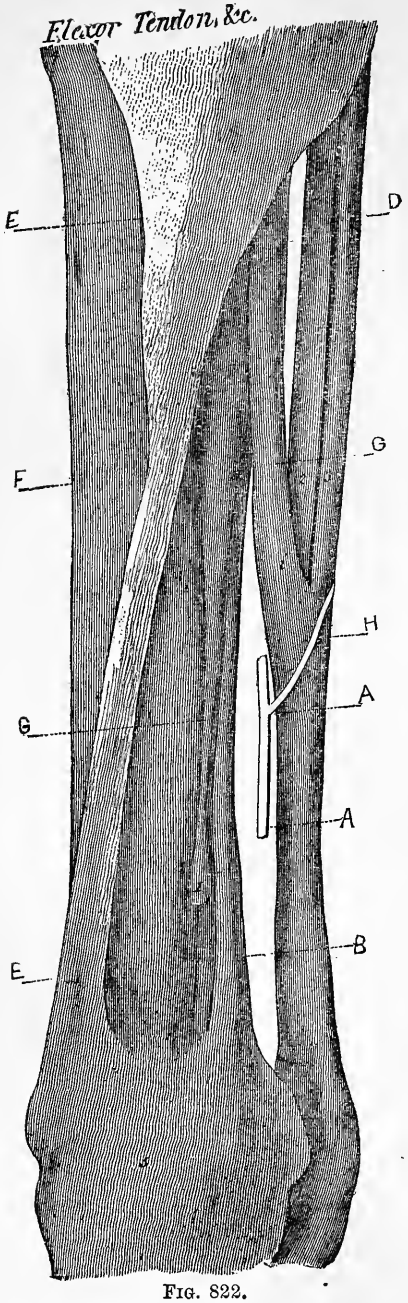


FIG. 822.

2 ounces nitre (saltpetre),
2 ounces sal-ammoniac,
4 ounces common salt,
1 pint spring water.

Or, the following:—

4 ounces saltpetre,
1 ounce sugar of lead,
1 ounce muriate of ammonia,
1 pint common salt,
2 gallons cold water.

Perhaps the simplest and best home treatment would be about as follows:—

Make a bag as long as the limb—an old trowsers leg of good size, sufficiently long to extend from the hoof to above the knee would be the thing. Tie a string rather loosely around the foot below the fetlock. To keep it in place, secure a wide tape or strip

A, The outside nerve, or that part of it where the branch H communicates. B, The suspensory ligament. C, The great ligament of the back sinew. D, The two back sinews, or flexor tendons. E, E, The extensor tendon. F, The cannon or shank bone. G, The splint bone. H, The back sinews and their great suspensory ligament, apparently joined together. This, however, is not the case; it incorporates only with the perforans tendon, marked figure 2, and so intimately that they form one and the same substance, at the part marked by the letter *i*. The perforatus, marked figure 3, forms a sheath for the perforans, as already described in the article on Strains. 5, The fetlock-joint.

of cloth to the upper edge of the bag, pass it over the shoulder and fasten to the opposite edge; next take bran, to which add a little salt, and pour on it as much boiling water as will bring it to a thin consistence. While hot as the horse can bear, fill the bag with it. This will form a poultice around the part and keep it moist and sweating. It can be kept hot by pouring on hot water occasionally, and should be renewed, if necessary, in twenty-four hours, and so continue until the inflammation subsides. In all cases of severe sprain, a purgative should be given; it reduces the fever, and acts as a counter-irritant. In any event give opening, easily digested food.

FIG. 823.—Showing the back tendons considerably thickened in consequence of repeated injury or strain.

Having in this way reduced the inflammation, if the swelling still remains, apply a good strong liniment or blister. The biniodide of mercury ointment is best in these cases, and should be repeated:—

1½ drachms biniodide of mercury,
1 ounce lard.

FIG. 824.—Showing the effect of hard driving.

b

FIG. 825.—Enlargement of the tendons from interfering or banging.

A run at pasture will generally complete the cure. Sometimes, by repeated sprains, the tendons become considerably thickened (as shown in Fig. 823), in which case firing is preferable. Sometimes, from repeated sprains, the tendons become contracted, causing the animal to go on his toe; in these cases, the operation of tenotomy, or cutting the tendons, is advisable.

The following treatment

for sprains, which is given for insertion by a leading practitioner, will be found good:—

First wash with very hot water five or ten minutes at a time, then apply the following mixture:—

2 ounces tincture opium.
1 ounce chloroform,
1 ounce fluid extract aconite,
7½ ounces soap liniment.

To be applied two or three times a day after bathing the parts with hot water.

If constipated and feverish, it should be given a slight purging ball. If the case has run two or three days, and is assuming a subacute stage, then stimulating liniment must be used. The following may be used:—

2 ounces aqua ammonia,
2½ ounces spirits of camphor,
7½ ounces alcohol.

To be rubbed on two or three times a day until the skin becomes sore.

Breaking Down.

The suspensory ligament is one of the strongest in the body; it is placed immediately behind the cannon-bone, from the head of which it rises; passing down it divides, one division going to each of the small bones at the back of the fetlock (ossa sessamoides.) (See Fig. 821.) This ligament is the great main-stay of the fetlock-joint, and sustains the most of the weight at this part, consequently we frequently find it snaps asunder under the great weight thrown upon it in leaping, galloping, etc. It is sometimes broken above the division ; but more commonly, one or both bifurcations are torn.

Causes.—Violent exertion, or sudden jerks, as is the case in leaping, galloping, or jumping from a height.

Symptoms.—It is sometimes mistaken for rupture of the flexor tendons; but this is so improbable an occurrence, that we are almost skeptical of its occurrence at all. If it does occur, it is extremely rare. In rupture of the ligaments, the fetlock descends to the ground; but when raised, the animal can flex the foot, which he could not do were the tendons ruptured. It usually occurs near the sessamoides when we have swelling, heat, and pain.

Treatment.—Slinging is almost indispensable to keep the limb steady, the judicious application of splints and bandages, and a high-heeled shoe should be put on so as to keep the parts *in situ;* and the inflammation must be regulated by the constant application of cold, laxative medicine, and cooling, easily-digested food, sparingly supplied, when re-union will take place, but a permanent thickening is generally left. When the animal is able to use the limb, the slings and splints may be dispensed with, and it may be fired or blistered to consolidate the new fibres, and form a permanent bandage to the part. The horse can never afterward be passed as sound, nor will he stand much hard work.

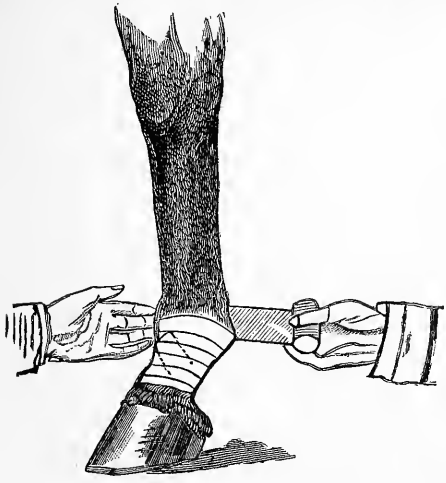


FIG. 826.—Method of applying the bandage.

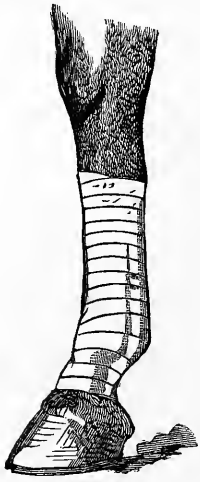


FIG. 827.—Showing the leg bandaged.

SPRAIN OF THE FETLOCK.

The ligaments of the fetlock-joint are sometimes sprained, giving rise to swelling of the joint, pain, and lameness. Its nature, causes, symptoms, and treatment differ so little from those of other parts that it is only necessary to state that the treatment is the same.

But suppose we have a strain of the extensor tendon or of the ligaments of the fetlock-joint, and the horse must be moved. In that case it would be necessary to apply a woolen bandage over the part carefully, drawing it tightly, and holding it in place by

sewing it on. But as soon as the stable is reached, this bandage must be taken off, and a loose one put on. If there is not very much inflammation, simply lameness and weakness, good treatment would be keeping the bandage thoroughly wet with hot vinegar and salt, by pouring it on. In one instance, one of my horses, Turco, was so seriously sprained that he could scarcely step, the joint knuckling forward as shown in Fig. 828. It was absolutely necessary to drive him eight or ten miles. By bandaging the leg tightly as described, he went along quite well; but as soon as the stable was reached, this bandage was taken off, and a loose one put on, which was kept wet as explained; and being compelled to drive him every day, this treatment was repeated; and though he was driven over one hundred miles in two weeks, he was at the end of that time entirely over the effects of the sprain.

FIG. 828. — Turco's leg as it knuckled forward.

At another time, when in Maine, Tommy sprained the tendons of one of his forward legs, so that he could scarcely step. We simply raised the heel-calks of his shoe, rounded the toe, and bandaged the parts loosely, and kept wet as explained. Next morning the ankle was tightly bandaged, when he was able to do considerable work in the ring, and walk through to the next town, ten miles. This course was repeated, and at the expiration of about two weeks, he was all right, though in the time driven about one hundred miles.

SPRAIN OF THE PERFORANS TENDON, OR NAVICULAR-JOINT LAMENESS.

The symptoms are very fully explained under that head, but would here state again, that in an acute stage, the principle is rest, with hot fomentations or cooling applications; next aiding mobility of the parts involved to prevent irritation, by the construction of the shoe, etc.

SHOULDER LAMENESS.

This is not very common, but is liable to happen from the

limb slipping sideways while running in a pasture, or slipping incidentally on a wet plank, or ice, etc.

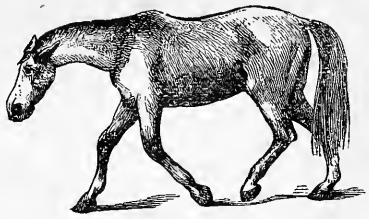


Fig. 829.—As a horse will travel with lame shoulder.

To guard against error in diagnosing affections of the shoulder, it must be borne in mind that all muscular tissue is apt to waste if it is deprived of its usual amount of exercise, as we frequently see in the shoulder; the shoulder shrinking on one or both sides, while the real seat of the disease is in the feet; therefore it is very necessary to be able to distinguish shoulder-lameness from many other affections with which it is apt to be confounded. Many horse doctors and those about horses are apt to attribute every lameness they do not understand, and whose seat is not self-evident, to an affection of the shoulder.

We have seldom any recognizable tumefaction, nor much heat, unless it be recent and violent. When the horse has strained the shoulder, the limb is brought forward with a peculiar dragging motion, as shown in Fig. 829; whereas if the trouble is in the foot, the limb will be raised and brought forward without much difficulty, but put down tenderly to lighten the concussion. While standing, the joints will be somewhat relaxed, the heel raised, with the toe resting upon the ground. In moving, the head will be carried low, the limb brought forward with a good deal of difficulty and pain, and without ability to bring it in front of the other.

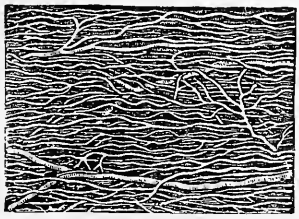


Fig. 830.—Distribution of capillaries in muscle.

Treatment.—Give a dose of physic, foment the shoulder and inside of the arm close to the chest with hot water, which is to be continued for at least one hour, and to be repeated as long as there is inflammation; give fever medicine three times a day; give food of a light opening nature, such as grass, bran mashes, etc., and keep him quiet in a box stall until the lameness disappears. One of the liniments for sprains, etc.,

may be used after the acute stage passes off. This is about all that can be done, though some bleed from the inner plate vein during the acute stage. This method is not now often practiced, however. When the case becomes chronic, blisters and setons may be employed with good success.

LINIMENT FOR SHOULDER-LAMENESS.

2 ounces aqua ammonia,
2½ ounces spirits of camphoræ,
7½ ounces rectified spirits of vini.

First, foment the part with hot water; then rub as near dry as possible, and apply the liniment twice a day until the skin is quite sore, and then stop for a few days; if the lameness is not gone by this time, renew the treatment as before.

FIG. 831.—Internal aspect of the left fore leg.

SWEENEY.

"This is a sprain of the muscle which fills up the posterior cavity on the outer side of the shoulder-joint (outer tubercle of the head of the humerous). It occurs mainly in young horses when first put to plow, or in others going on uneven ground, and stepping unexpectedly into holes. In the endeavor to recover the equilibrium on stepping into a furrow or hole, this muscle which forms the outer support of the joint is injured, and there results heat, swelling, and tenderness on the outside of the joint, and a most characteristic gait. The horse may walk, or even trot, without much apparent lameness; but standing directly in front of him the affected shoulder is seen to roll outward from the body to a far greater extent than the sound one. Soon the muscle begins to waste rapidly, and in bad cases the shoulder-blade may be denuded until it appears to be covered by nothing but skin."—*Law.*

A badly fitting collar often gives rise to it. A prominent cause also is some injury to the foot, which would prevent a proper use of the muscles of the shoulder, and thereby cause an atrophied or wasted condition of them. So that when there is wasting of the part, the foot should be carefully examined to see if there is any cause for it, and if so, removing it will of itself be sufficient to make a cure.

Symptoms.—At first, though it is seldom noticed, the muscles swell up, are hot and tender; in the course of a few days, the swelling has disappeared, and the muscles are becoming fast absorbed. In many cases this goes on till the bone can be felt. There is little or no pain on pressure in this stage, and no positive lameness; but there is a peculiar rotary motion of the limb, from the other muscles having no counterbalancing power. This is sometimes mistaken by non-professional men for dislocation of the shoulder-joint. This, however, cannot occur, unless it is accompanied by severe laceration, or even fracture.

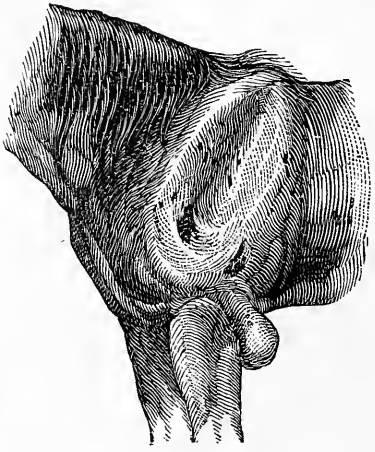


FIG. 832.—An ideal representation of the shoulder with sweaney.

Treatment.—In the first instance, rest and hot fomentations are indicated, which, as the process of reproduction begins, should be followed by stimulant embrocations or mild blisters, frequently repeated, with moderate walking exercise. In this case, we must trust more to nature than medicine; and in time the muscles will be reproduced, and by gentle work and well-fitting harness he will become as sound as ever. Many do nothing for them, but turn them to pasture, and in most cases they come up all right.

The simplest and most effective treatment for filling up the shoulder is the rubbing on thoroughly with the hand of soft soap, to which a little salt has been added. This do four or five times in the course of a week. This simple remedy, which is very effectual for this purpose, has been kept as a great secret by a

leading horseman in Toledo, Ohio, who has repeatedly sold it for five dollars, first showing its effect in filling up the shoulder, when he could easily sell the prescription.

Hip-Lameness.

Sprain of the whirl, or round bone, as it is commonly called, consists of a sprain of the round ligament of the femur, which holds the ball in the socket. Sometimes it is almost torn asunder; but so strong is this articulation, that dislocation cannot occur, except as an accompaniment of fracture.

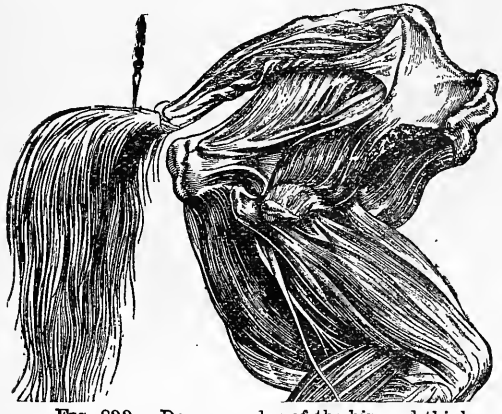


Fig. 833.—Deep muscles of the hip and thigh.

Symptoms. — Very seldom any external swelling unless it is very severe, and the muscles surrounding the joint are involved; when by making him stand square on his hind legs, and standing directly behind him, and comparing one hip with the other, any enlargement can be easily detected. Sometimes we have heat and tenderness; but in most cases these are absent. One characteristic symptom is stepping short, the lame leg is not brought as far forward as the other one, and he drops on that quarter. The tendon of the gluteus maximus, as it passes over the trochanter, is frequently the seat of the lameness. In this case we have swelling, heat, and pain on pressure, with short stepping. When the horse stands in stable, he will stand square on both hind feet; and when moved the lame side is elevated and dragged along for want of muscular action.

Treatment.—The first condition, as in all cases of lameness, is rest, with fomentations, alternated by cooling lotions, etc., until the inflammation is subdued, followed by repeated blisters, which must be freely used, as the disease is deep-seated.

Apply hot fomentations to the part two or three times a day,

which should be continued an hour or more each time, alternated

FIG. 834.—Showing the superficial muscles of the hip and thigh.

with the pouring on of cold water. When the acute stage passes off, clip the hair closely from a large surface ten or twelve inches in diameter over the part, and apply a sharp blister; a better condition of counter irritation will be produced by applying at the same time two setons, which are to be extended under the skin about six inches each, something of the form as shown in Fig. 835. (For special instruction, see Setons.) If need be, repeat the blisters. Recovery usually takes place in from one to two weeks; but is sometimes a very serious lameness, and must be attended to thoroughly and promptly.

FIG. 835.

The following is the treatment advised by very able practitioners:—

"Give a laxative, and apply hot fomentations to the part two or three times a day. After each fomentation apply a strong stimulating liniment. Continue this treatment until the skin is sore, then cease the treatment, and apply the following for a few days:—

" 6 ounces soft soap.
12 ounces alcohol.
" Apply twice a day until well."

Knuckling Over.

Knuckling, or standing over, is very common in cab and stage horses. It gives the animal an ungainly, worn-out appearance. It may occur on one or both knees, which are bent forward, and are very shaky, or the fetlocks may be knuckled forward. Veterinarians differ as to the real nature of this condition, or as to the part really at fault. Some suppose that it is from "a relaxed and lengthened state of the extensor muscles;" others "of the ligamentous tissue at the anterior part of the joint;" others "an inordinate contraction of the flexors, to such a degree that the equilibrium of the flexors and extensors is destroyed. Dissection, however, fails to confirm these views. It appears to us to depend on contraction of the ligaments at the back of the joint.

Fig. 836.—An ordinary case of sprung knees.

Causes.—It is generally caused by too hard work when young, particularly continued road-work, which causes the joints to start forward, as shown in Fig. 836; and if it is continued, it becomes habitual.

Symptoms.—It requires but to be seen to be recognized. Instead of the beautiful, symmetrical form of the limb, the joint is thrown forward, throwing the shank-bone more oblique and the pastern-bones more straight, giving the animal a jaded, tottering appearance.

Treatment.—Some blister, or fire and blister; but we think

these do no good whatever. All we can do is to give rest; leave the rest to nature. Turn him into a large loose-box or small paddock, and feed him well, and it is astonishing how the patient will sometimes improve.

Drs. Hamill and Meyer treat ordinary cases of sprung knees with very marked success, by lowering the heels and lengthening out the toes somewhat; this can be done both by paring the heels down some, and using thin-heeled shoes; then rubbing on the legs once or twice a day alcohol, or any good stimulant. The case seems to improve even under moderate work. Very bad cases are incurable.

Broken Knees, or Open Joint.

It is a very common occurrence in the horse, generally arising

Fig. 837.—Broken knee.

Fig. 838.—The same with hair clipped from the edges of the wound.

from accidents, kicks, blows, stabs, etc. It is most common in the knee and hock; but all the joints of the limbs are liable to be punctured or laid open by some accident or injury.

Open joints are generally divided into lacerated and punctured. In the former we have the skin, ligaments, etc., cut through, and the joint laid open, as is often seen in the knee. In the latter we have merely a small opening (it may be only sufficient to admit the probe) into the joint, from which trickles the synovia, or joint-oil.

All cases are alike dangerous, and are characterized by the same general symptoms, and are liable to be attended by the same consequences. They differ only in degree, according only to the importance and extent of the cavity exposed.

Causes.—The causes of open joint are almost invariably external injury—in the knee from falling. The horse stumbles; falls upon his knees; and should the ground happen to be gravelly, hard, or stony, the knees are liable to be lacerated, or cut through.

In other joints the injury is usually caused by being incidentally stabbed or cut.

Symptoms.—In giving an opinion in these cases, we must bear in mind that the joint is not always open, although we have a discharge of synovia from the wound; we may have it from the theca or sheath of some tendon, and it requires close examination in some cases to say which it comes from. What we imply by the term open joint, is where the skin, ligaments, tendons, etc., have been cut through, and the articulation laid open.

In the first place, the animal is very lame. On examining the wound with the probe or finger, it is found to penetrate the joint; we have a clear, oily fluid, which is very smooth and slippery to the touch. The discharge may be very trifling, still it is not the less dangerous. In most cases we have symptomatic fever, which often runs so high as to cut the animal off. It is recognized by the quick pulse, hot mouth, irregular heat of the surface, costive bowels, and the excruciating pain the animal evinces.

Treatment.—This is the most important part of the subject. In the first place, the animal must be removed to a comfortable stall or loose-box with a high roof, and well ventilated; he must at once be placed in slings, which should be gradually tightened until his toes barely touch the ground.

The wound must be washed out with tepid water, all gravel or dirt removed, and the real extent of the injury ascertained. The limb must then be placed in splints, well padded, and held together by leather straps. A very convenient plan for the knee is to take three slips of wood, about three inches wide, and half an inch thick, reaching from the elbow to the foot, with the edges beveled and well padded, and nailed together with three straps, which buckle in front. This, placed one at each side, and one behind, prevents flexion or extension of the joint entirely, and leaves it open to be dressed at pleasure, without undoing the splints. A large poultice of linseed or oatmeal should be applied

cold, and continued until the granulations spring up from the bottom to close the wound. This simple plan of treatment is infinitely more soothing, and at the same time more successful, than the former methods of plastering it up with lime, flour, powdered bluestone, oxide of zinc, white vitriol, etc. To some, these may seem very convenient and effectual methods of stopping the discharge, and, doubtless, in some cases they may succeed if circumstances are favorable; but in many cases when an artificial plug is thus formed, it merely plugs it up for a little time. By and by, ulceration of the skin occurs, the plug falls out before the internal parts have healed, and the consequence is, that we have a far larger and more dangerous wound than before. In changing the poultice, be sure not to remove any of the coagula of synovia that may have formed around the opening. The poultice must be simply removed and changed, without washing the wound.

When the granulations become extuberant, they can be regulated by squeezing a sponge of cold water over it, or dust on a little oxide of zinc. Nothing, however, must be injected into the wound, as is sometimes done. Punctured wounds of joints must be treated on the same principle; the joint must be kept perfectly still, and the granulations encouraged by poultices, etc.

Very often there are wounds in front of the knees, usually caused by falling or striking against some hard object, which may be more or less severe, according to circumstances. In a simple case of ebrasion, but little if any treatment will be necessary; if much bruised with skin broken, tie short to a high rack to prevent lying down. Bandage the part tightly and keep wet with a mild astringent, such as—

½ ounce sugar of lead,
50 or 60 drops carbolic acid,
3 pints to 2 quarts water.

Keep the horse quiet until the inflammation is subdued.

The best lotion in my judgment for these bruises and superficial cuts of the skin, is collendula. It has the best effect in reducing inflammation of a bruise and cut of this kind of anything I know of. (See Collendula in list of medicines used.)

Fractures.

Owing to the difficulty experienced in keeping the bones of the leg of the horse in place to enable their reunion, with the expense and trouble involved, in addition to the fact that if even treated successfully the horse is supposed to be of but little value afterwards, there is but little encouragement given by veterinary authorities for the successful treatment of such cases. But the success of Dr. Macbeth, of Battle Creek, Mich., in treating ordinary fractures, has been so marked, and by such simple treatment, too, which is, I believe, peculiar to himself, not being, so far as I know, laid down in veterinary works, that I am induced to give his method of treatment, which he kindly explained to me with permission to publish, as it may serve to occasionally save a valuable horse.

He tells me that within the past two years he has treated three cases with perfect success. The first, a yearling, was a split of the ossafraginis, or short coronary bone of the fore leg. The second, a four-year-old, a fracture three inches above the fetlock-joint of the off hind leg. Third, an oblique fracture, involving the fetlock joint one inch above the joint of the fore leg of a seven-year-old. His method of treatment is as follows:—

After providing himself with the best quality of plaster-of-Paris, he prepares from three to four splints made of strips of hickory-wood, about an inch and a half in width, and a fourth of an inch thick, of suitable length, or pieces of band iron about one-eighth of an inch in thickness, with the ends thinned down somewhat, and if necessary, the edges and the bar bent to fit the form of the part; he next provides bandages of suitable strips of cotton cloth, about three inches and a half in width. While the horse is standing naturally, the limb is brought forward a little, resting easily and naturally upon the ground, when the bones are held gently in a proper position. The part is first covered with a bandage of one thickness of the cloth; next, a little of the plaster, after being prepared, is put on the cloth under the splints, so as to level off the inequalities of the surface, and give an even bearing to the splints. The bandage is now started from the bottom, with the aid of an assistant; a little of the plaster is laid on quickly with the knife, in a layer of from one-fourth to three-eights of an

inch thick, when the bandage is brought quickly over it, and drawn tight enough to cause the water to ooze through the cloth; this is continued, the bandage being lapped about one-half of an inch, until carried beyond the edges of the splints, when the process is reversed to the bottom, and then again to the top, making in all three layers, which forms a strong, unyielding cast about an inch, or a little more, thick around the part, when the horse is given freedom to take care of himself in a large comfortable stall.

An important condition of success is in the preparation of the plaster. First, it should be of the very best quality; next, as the plaster will set very quickly, not more than enough for one layer should be prepared or attempted to be put on at a time. Put in a tin dish about as much plaster as will be necessary for one coat or layer over the part. Pour on sufficient water to wet it well, and stir thoroughly for one minute. Being all ready, instantly commence putting on, laying on as stated, until the plaster becomes too hard, when make another batch, and continue the process, and when that is used, making more, and continuing until finished.

If the skin is broken, or there is a serious cut, as the splints are being put on, avoid covering the spot with wood or iron, and in the course of from six to ten hours, a hole should be made through the plaster to it, when it is to be treated as an ordinary wound. The point is to make the casing so long and tight as to thoroughly support the limb, without being too heavy or clumsy, yet not to obstruct the circulation.

In each of the cases referred to, there was no swelling or other trouble, and consequently no after treatment. The horse was let alone, and in about eight weeks the cast was taken off, when there was found to be a complete union of the parts without any noticable deformity.

Dr. Macbeth tells me this method of management is original with himself so far as he knows, and certainly its simplicity in connection with his success, entitles him to considerable credit. Plaster has been employed, I understand, for this purpose, but was put on in such a way as to form a mass excessively heavy and clumsy, and consequently not favorable to success.

Of course, when such an accident occurs, if a practitioner is

available, he should be at once called in. The treatment is included mainly for the benefit of practitioners.

Dislocation of the Patella, or "Stifled."

This is most common in colts, from the outer condyle not being fully developed, allowing the patella to glide off and on at every step.

Causes.—It occurs generally in young animals, and is most common on hilly pasture when the soil is gravelly; the feet becoming worn and tender, causes him to relax the stifle in walking, when the patella is apt to slide off. It sometimes occurs from external violence, or from interstitial absorption of the condyle.

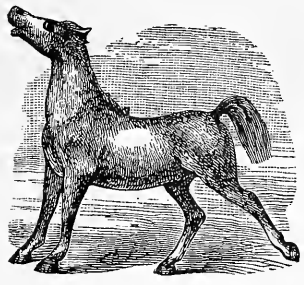


Fig. 889.—The horse as he usually appears when stifled.

Symptoms.—The limb is extended backward, the foot is bent up, and the animal drags the limb as if it were cramped and unable to draw it forward. Cramp of the muscles of the legs is not unfrequently mistaken for dislocation of the patella. But cramp is easily known from the suddenness of the attack, from there being no enlargement at the stifle, and from the bending up of the foot.

Treatment.—It must be returned to its place as soon as possible, which can be easily done in the following way: Make one or two assistants pull the foot forward, while you push the stifle back, and at the same time push the patella forward, when it will slip into its place, and the animal will walk off almost as sound as if nothing had happened. If it is followed by lameness or swelling about the joint, rest must be given, and to prevent its recurrence, the stifle may be blistered.

A very good plan with colts, in which it frequently comes out, is to remove the patient to a loose-box, with a level, even floor; and to put a shoe on, with a tip projecting in front about two or three inches, slightly turned up, which will keep the muscles attached to it on the stretch, and so prevent its slipping out again. This may be worn for one or two months, as required.

A good deal of a secret in relieving a horse when stifled, is to take short hold of the bridle or halter, so as to throw the head up

with a jerking motion, and quickly force the horse back upon his heels. It is rarely the peculiar exertion will not bring the patella back into place; when, by walking the horse back and forth a little, he will be found all right.

Stifle-Joint Lameness.

Besides dislocation of the patella or knee-cap, from laceration or extension of the lateral ligaments, we frequently find the stifle-joint itself diseased. The condyles may be diseased, or the semi-lunar cartilages may be displaced. Sometimes the tendinous origin of the flexor metatarsimagnus (the principal muscle in bending the hock-joint) is torn or strained. This is always a serious lameness, owing to the flexity of the part involved.

Causes.—The causes are the same as in other joint-slips, blows, wrenches, etc.

Symptoms.—In moving, the limb is held as straight as possible; it is moved of a piece, as it were, the stifle is turned outward at every step, and the leg is swung around, and placed farther forward than in hip-lameness. In most cases we have heat and swelling. If made to stand on the limb, the capsular swelling can be felt, and pain is evinced on pressure.

Treatment.—Rest must be given. If the cartilages are displaced, they must be replaced by careful manipulation; hot fomentations, or continued cold applications, must be applied; and in the latter stages, repeated blisters or setons should be resorted to.

Cuts or Wounds.

In ordinary cases they are easily managed. All that is necessary to do is to clip the hair from the edges of the wound, remove any hair or dirt from it by sponging the part with warm water, and dress it with any of the healing preparations or digestives hereafter given, which will cause a secretion of yellow matter, and a healthy granulating process. Each day following, to be cleansed by sponging out with a lather made of castile soap and warm water, and the application of the medicine repeated.

In a very serious, deep or contused wound, if any large blood vessels are severed, they should be tied up. Arteries will throw the blood out in jets, and veins in a steady stream. If an artery

is cut, it must be stopped promptly; if it cannot be tied up, it can usually be stopped by touching it with a hot iron, or applying any good styptic. (See Styptics.) Simply covering over with cobwebs will usually answer a good purpose. Clip the hair from the edges, also any bits of loose skin which would be liable to slough off; but it is always advisable to save every bit of skin that can be kept alive; the part to be sponged out daily, and the dressing repeated. The injury will heal from the bottom, gradually filling up, by what is termed a granulating process. If there is serious inflammation, swelling and pain, poultice; but if poultices cannot be used to advantage, or if pain and swelling are very severe, hot fomentations must be applied and continued without intermission until it subsides; then dress daily as directed. Care must also be taken to keep the horse quiet in a comfortable stall, free from the annoyance of flies, and fed with easily digested, laxative food; if much tendency to fever, give a small dose of physic.

If the cut or wound is deep, dress with a tent, which is simply a wad of tow dipped in digestive ointment, which will be referred to farther on; the cavity is not to be filled with the tent, but only the bottom, and then the wound will heal up as it ought; if the wound is merely syringed out, or dressed superficially, it is liable to close over at the surface, and appear healed, while at the bottom the matter is spreading and burrowing, forming a sinus; in case there is too rapid granulation, or *proud flesh*, check it by touching with a little caustic. When the wound fills up, and there is not skin enough to cover it, dusting over it a little of the magic healing powder, or any of the astringents given, will cicatrize it quickly. If a wound is indolent, or does not seem to granulate, simply use a stronger stimulant; if serious, using a caustic, which will remove the unhealthy parts, and set up a healthy condition of granulation. A very good, simple stimulant to rouse an indolent ulcer to action, is an ounce of blue vitriol, pulverized, to a pint of water; and for a simple healing or granulating effect, a lighter preparation, or about 2 drachms to a pint of water: to be used as a dressing once a day. If the wound is deep so as to make a pouch of accumulated matter, it must be syringed out from the bottom every day, or better a dependent opening made from the bottom, and kept open by a piece of tape or string passed through it, to let the matter pass off.

For deep, incised wounds, from pitch-fork, etc., the following is claimed to be excellent:—

1 pound saltpetre,
1 gallon water,
1 quart best whisky.

Inject into the wound with a syringe three times a day until a cure is effected.

It prevents inflammation or a tendency to sloughing or mortification. A gun-shot wound, a foot deep, in the thigh of a horse (the ball could not be found, remaining in the leg) was perfectly cured in two weeks by this treatment.

In any case of sinuses being formed, they must be opened up to the bottom, and made a simple wound, when it is to be treated as for a wound. Or, the pipes destroyed by a caustic introduced and repeated until the unhealthy part is sloughed out to the bottom. A very simple and effective caustic is that made of blue vitriol, either in strong solution, when it could be injected, or a little powdered fine in the form of a tent, which is simply a little rolled up in a strip of thin paper, twisted at the ends, and pushed to the bottom with a probe. Several parcels of this kind, one after another, can be pushed in until the sinuses are filled. In four or five days a core will be formed, which will usually destroy the sinuses to the bottom; if any remain, it can be ascertained, and the dressing repeated upon that part, until it is all made a clean wound, when it can be treated as before described with a simple digestive preparation.

If there is an injury to the bone, ligament, or tendon, and not treated properly, a small sinus is formed, from which matter will ooze. In such a case, a probe must be introduced, and its extent ascertained; if the sinus extends to the bone, which can be known by the probe striking it, a free opening should be made to the bottom, if the situation will admit, the diseased surface scraped off, when it can be treated as before explained, by the use of Friar's balsam, etc. If all dead matter is not removed, sinuses are again liable to form after the wound is healed, when the whole treatment must be repeated.

Punctured wounds of the tendons, and the capsular ligaments of the joints, which often happen in the hind or fore legs, should be first touched with lunar caustic by making the stick pointed,

and insert into the wound an eighth of an inch or more; then if necessary, poultice. This class of wounds, it is found, do not do well by the treatment pursued in other wounds. So long as there

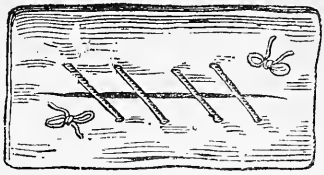


Fig. 840.

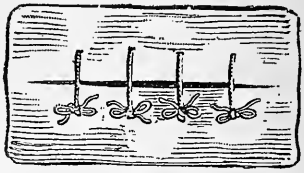


Fig. 841.

is freedom of the synovial fluid in passing off, or any irritants are permitted to enter such a cavity, they seem only to aggravate it. The point is to first stop this, which can be done best as directed, or by touching lightly with a hot iron; keep the animal quiet, and use an astringent dressing; if inflammation is excessive, poultice, and there will usually be no trouble.

If clean cut, or the wound is of a character that will permit the edges being brought together, as in cases where the skin is widely separated, the point is, after sponging out the part so as to remove any foreign matter, to bring the edges together, and hold them in apposition, if it can be done without the skin sloughing, until healing by first intention takes place; but this seldom can be accomplished, excepting to a partial degree, in the horse, on account of the amount of muscular action of the skin; but in many cases it must be resorted to, and will enable holding the

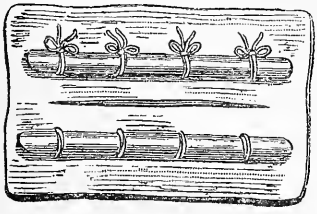


Fig 842.

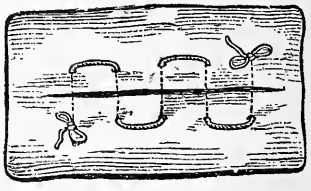


Fig. 843.

edges together sufficiently long to enable the wound to heal without leaving much of a scar.

The stitches, which should be from three-quarters to an inch apart, can be made by means of a curved flat needle, with silk or linen well waxed. I give illustrations of different methods of do-

ing this, which should make it sufficiently plain to be understood. First by stitches; or, by approximating the edges by stitches passed around a quill or small piece of round twig placed on each lip of the wound, termed *quilled suture*. Or, pins may be passed through the lips at suitable distances, and a little tow or thread twisted around each, like the figure eight, as shown, or the edges may be held together by strips of sticking-plaster. A good adhesive plaster can be made by melting about two parts of burgundy pitch to one of tallow, and spreading while hot upon cloth; cut in strips of proper length and breadth, draw the edges of the

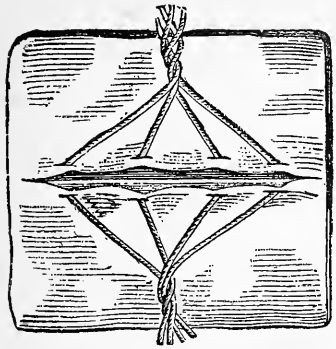


Fig. 844.

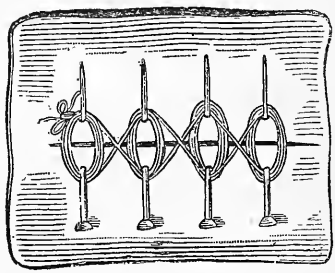


Fig. 845.

skin together, and lay on while hot; the parts to be dressed with a weak solution of carbolic acid, about in the proportion of one part to twenty or thirty parts water. The writer has had excellent success by the use of calendula, tincture of the garden flower called marigold, this should be diluted with about one-fourth to one-third of water; or any good antiseptic may be used.

The following for this purpose, obtained from one of the best practitioners in the country, is included:—

"In wounds where the muscles are badly contused and lacerated, the following wash has taken the precedence above all other remedies, and by far supersedes carbolic acid. It acts as an antiseptic, and prevents excessive granulation. Take 1 oz. white vitriol or sulphate of lime, to 16 oz. water. Syringe the parts out well with the lotion, after being well cleansed, twice a day. By taking 1 oz. of white vitrol to 4 oz. of water, and penciled on the parts with a camel's-hair brush two or three times a day, it will cut down the excessive granulations commonly called "proud flesh."

For a healing ointment, the following is unrivaled:—

2½ pounds palm oil,
2 pounds lard,
½ pound gum turpentine,
¼ pound beeswax,
1 pound calamine.

Simmer all together over a slow fire, and it will be fit for use. Put a little in the wound once a day. Wash the wound with warm water and castile soap before applying the ointment.

This is the favorite prescription of one of the best practitioners in the country, and is among the very best for the cure of cuts, pricks, and incised wounds in the feet, etc. It sets the wound to running yellow matter quickly, and produces a healthy, granulating process.

Turpentine and hog's lard, equal parts, simmered together, with a small quantity of powdered verdigris stirred in, is also a fine healing preparation for cuts and wounds.

The following is also a fine healing preparation, good for old sores or injuries in the feet, etc.:—

1 oz. tincture of myrrh,
2 oz. tincture of aloes,
1 pint water.

To be applied once a day.

Healing ointment for cuts, galls, etc:—

4 drachms oxide of zinc, pulverized fine,
6 grains carbolic acid,
1 ounce lard.

Melt the lard and stir in the zinc. Add the carbolic acid and mix thoroughly. Apply once a day. Will cause a healthy discharge from a foul ulcer.

Magic healing powder:—

½ oz. burnt alum,
1 oz. prepared chalk,
1 drachm pulverized gum camphor,
2 drachms calamine, pulverized.

Mix, sprinkle on the sore.

When a wound will not heal, or there is not skin enough to cover it, dust on a little of this powder, and it will cicatrize it quickly. It is good for galls, saddle wounds, or other parts where the skin is thin or broken, providing there is no inflammation and condition requiring healing astringents. This is the original recipe

for the famous magic healing powder. and has been sold, as a great secret, for ten dollars or more.

A good healing preparation, especially for cuts or incised wounds in the feet: Tar and hog's lard, equal parts, melted together, removed from fire and stirred till cold.

The following hoof ointment has been in use in the British army, and used by British farriers. It is highly recommended by our most eminent veterinaries of this country:—

2 parts mutton tallow,
2 parts white resin,
2 parts barbadoes tar,
1 part yellow bees wax,
1 part castor oil,

Melt the resin and bees wax together, then add the tallow. When melted, add the tar and castor oil, then remove from the fire and stir until cold.

This ointment is mostly used for diseased conditions of the feet. It is also effectual for the cure of many of the most troublesome skin diseases. Blotches and cracks of the heels, to which so many horses are liable in winter, is cured by nothing so readily as by this ointment, well rubbed in, after the parts have been thoroughly washed with warm water and soap. This ointment is also good for cattle, sheep, and sporting dogs.

Injuries of the Tongue.

The tongue is often injured by violence, pulling it out in giving medicines, either by the restlessness of the animal or clumsiness of the operator, often by being tied up with a "hitch" of the halter in his mouth; by running back, he sometimes cuts it nearly through. A very common cause also is the use of a severe bit.

Treatment.—If not too much lacerated, the divided edges should be brought together by the metallic suture, and dressed frequently with the following lotion:—

1 ounce alum,
1½ ounces borax,
1 ounce honey,
1 quart water,

If it is nearly cut across, it may be necessary to remove it, and tie the blood-vessels, and dress frequently with the above lotion.

Tincture of marigold, called colendula, is so good for bruises and cuts of this character, that I think it worth mentioning.

When in Painsville, Ohio, a horse was brought in by a leading gentleman. He stated that the horse had the habit of pulling recklessly ahead against the bit, so much so that he could not be stopped, offering to wager that he would pull eight men with the bit. Upon trial, with a breaking bit on, he pulled eight men around the ring, causing his tongue to become caught under the bit, and was cut fully half off, and the mouth badly bruised, and became terribly swollen in a short time. I had a few ounces of colendula with me, which I had obtained to try its effect if opportunity presented. I reduced some of it one-third to one-half with water, and bathed the mouth and tongue with it thoroughly, repeating two or three times in a couple of hours.

Being compelled to leave for Madison the same evening, I directed the owner to bathe the parts with the colendula four or five times a day at least until my return. I remained at Madison one day, went to Geneva the next, when I again returned to Painsville to fill my engagement there, being absent three days. Upon examination, I found all swelling and inflammation gone, and the tongue entirely healed.

A horse having lost part of the tongue, cannot drink without plunging the head deep in the water.

To cure cuts or bruises of the cheeks, use inside—

1 drachm tannin, to
1½ ounces borax, and
3 or 4 parts water.

Swab the inside of the wound once a day.

For the outside dressing, use—

1 ounce tincture myrrh,
2 ounces tincture aloes,
½ pint water.

Mix, and swab the parts once a day.

Wash or sponge the parts with warm water and castile soap before each dressing.

Sore Mouth.

The lips frequently become sore at the angles of the mouth,

from cutting or bruising of the bit. Tincture of myrrh and aloes, equal parts, applied to the sore, will soon cause it to heal.

Fistula of the Withers.

The principle of treating fistula of the withers and poll evil is the same as for treating other deep-seated ulcers explained; the only difference is that they are more complicated on account of their location, and require, if anything, more careful treatment.

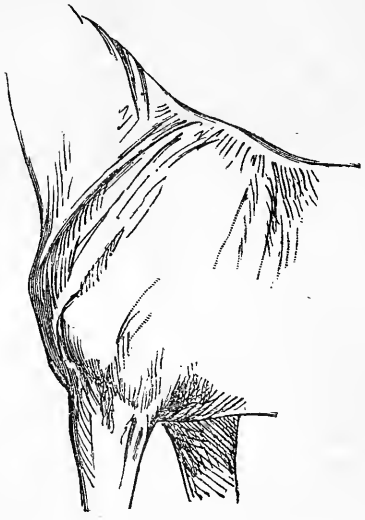


Fig. 846.—Shoulder in healthy condition.

Fistula of the withers is caused by an injury to, or bruising the top of, the first vertebra of the neck, or the ligament covering it. At first there is simply inflammation, with some swelling, making the part very tender and sore; if this is not arrested or dispersed, matter will form and penetrate in different directions, around and between the dorsal vertebra, and under the shoulder blade, before it comes to the surface. Consequently the fistula may extend to both sides, and if neglected, may seriously involve the bones, in which case the cure will be proportionately more difficult.

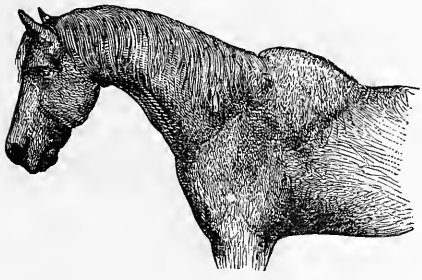


Fig. 847.—Showing a bad case of fistula.

At its early stage, when there is simply inflammation and soreness, cooling applications, such as pouring cold water upon it, or directing a small stream from a hose against it, and repeating, is good. The part can be kept wet by the following lotion, and then if the inflammation does not abate, give a dose of physic and apply an iodine or sweating blister:—

4 ounces salt petre, 1 ounce sugar of lead,
1 ounce muriate of ammonia, 1 pint common salt,
2 gallons cold water.

Lay on a few thicknesses of cloth, and keep wet with it.

Or the following may be used:—

8 ounces tincture of arnica,
1 quart water.

Fig. 848.—Festula of the withers, showing seton.

If, however, matter forms, the sooner the abscess is opened the better. When this is done, the extent of the injury, or of the sinus, if any have formed, must be carefully ascertained with a probe, or by introducing the finger. If this cannot be done to advantage, then the pipes must be destroyed by the introduction of caustic tents, as before explained for treating deep seated ulcers, so that it will make a clean sore; then a depending opening for the matter to run off must be made by passing a seton from the bottom outward, and sponge or syringe it out once a day with a strong suds of warm water and castile soap. It must be borne in mind that if allowed to heal over with pus, or any unhealthy matter remaining at the bottom, matter will continue to form, and finally break out anew, making, if anything, a more complicated condition of ulcer. The point is to see that all foreign matter, sinuses, or unhealthy bone, is thoroughly removed. Sinuses can be removed either by cutting away or sloughing off

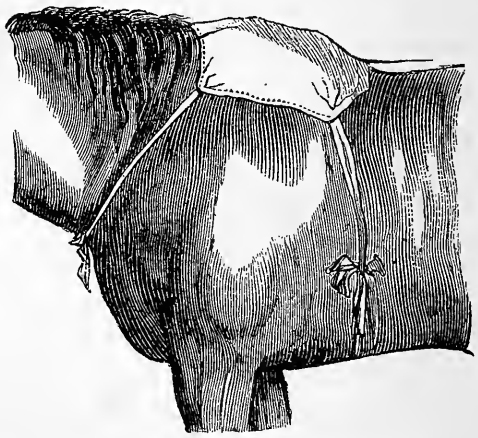


Fig. 849.—Good method of covering the parts.

with caustics as explained, and the diseased bone by scraping. Syringe out the parts well, first with castile soap and water, then with a mild solution of blue vitriol, or carbolic acid and water; after which treat as before with digestive ointment, tincture of myrrh, etc., as may be found advisable.

Soon after my leaving the road, one of my horses, Gifford, was threatened with fistula of the withers. When able to examine the case, I found there was severe inflammation and swelling of the parts, which was so painful that the horse would not allow it to be touched. The veterinary surgeon in charge had applied a sharp stimulant, the effect of which was intensified by covering the parts with a couple of thick blankets. The horse was very fat, and there were indications of matter forming, which, as the horse was extremely sensitive, would cause great trouble in dressing the parts, which would be necessary for some time. I expressed my fear of this result, but the doctor thought differently, assuring me that he had every reason to believe the inflammation would disperse in time. I left, giving him full liberty to manage the case in his own way, and was gratified on being informed shortly afterward that the inflammation was dispersed, and in this way a cure was affected. The serious condition of the case, and the success with which the cure was affected by dispersing the inflammation, induced me, for the benefit of my readers, to write to the doctor for the details of the treatment used. which I here include.

"The treatment pursued in the management of Gifford was as follows: Take two pounds salts, four ounces cream of tartar, mix well, divide into nine doses, and give one dose once a day in his feed. For the local treatment, I took of the tincture of iodine and cantharides, equal parts, and applied to the shoulders every day for ten or twelve days; after which, I used a stronger solution two or three times a day for three or four weeks. The case was a very bad one."

Poll Evil.

Poll evil is caused by being clubbed back of the ear, striking back of the head against an obstruction, pulling hard upon the halter, or checking the head high, so as to bring undue pressure upon the ligaments of the parts, which will be shown by the inflammation and swelling over the first vertebra of the neck. If this inflammation is allowed to continue, the posterior part of the

occipital bone, and sometimes the atlas bone, also the strong tendon over them, will be involved, causing serious ulceration of the parts, unless taken in hand promptly. The principle of treatment is precisely that of fistula of the withers. First, cooling applications, a dose of physic, and a cooling, opening diet.

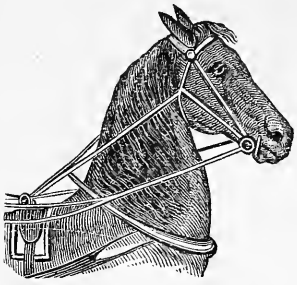


FIG. 850.—Method of checking that is liable to cause poll evil.

A favorite prescription for dispersing inflammation of this kind, used by an old author, is,—

2 drachms tartarized antimony, crysalized and finely powdered,
2 drachms olive-oil,
1 ounce hog's lard.

Vaseline can be substituted for the oil and lard. When properly rubbed on the part, this will act as a powerful blister, but does not blemish. Should matter form, it must be opened to the bottom, and, after being cleansed out, ascertain how far matter has burrowed, or the degree to which sinuses have formed. It is not prudent to do any more cutting at this part than simply to make a sufficiently deep incision to give an opening for the matter to pass off. If sinuses have formed, caustic tents are to be introduced, as before explained, until a clean sore is made. If the bones are involved, they must be scraped. Next, a depending opening made by running a seton from the bottom outward. Sometimes the matter extends across the neck to the opposite side. In such a case, the best way is to run a needle across between the muscles, and out on the opposite side, making an outlet on both sides.

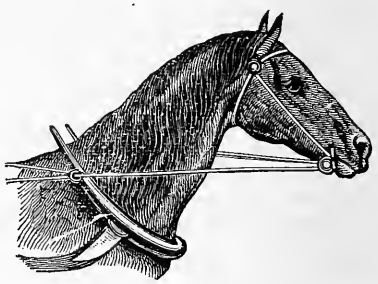


FIG. 851.—The head as it should be given freedom in harness.

The after treatment is the same as for fistula of the withers, being careful to remove all foreign growth, or diseased bone. Dress first with slightly caustic solution, then with digestive ointment, as explained.

I will include here a remedy which is claimed to be very ef-

fectual in the cure of poll evil, fistula of the withers, etc. Burn corn cobo, and fill the cavity to the bottom with the ashes. It may be necessary to repeat two or three times, before a cure is effected. The ease with which this can be applied makes it worthy of trial. I obtained it under the following circumstances:—

When in Central New York, during my last tour through that country several years ago, a man said to me that he had a simple but sure cure for fistula of the withers, poll evil, etc., which was a secret, but which he would give me if I would pass him into my class. He claimed to be able to satisfy me as to the effectiveness of the remedy, by indorsements from several well-known citizens who were present. I said, "Bring on your proofs." He brought forward, among others, a man who stated that he had a horse which, for two years, had been doctored for fistula of the withers of the worst character, without doing any good, and at large expense. He finally treated the case as this man directed, and after three applications the cure was complete. Others stated that the man had treated cases for them, with the same success.

Fig. 852.—Showing seaton.

The writer would be greatly obliged to parties giving this remedy a trial, if they would report to him the results.

Since writing the above, I requested a veterinary surgeon of my acquaintance to give this a trial, when he had a case offered for treatment. A very bad case of poll evil was brought in from the country; there were two deep cavities, and he directed the owner to fill them with the ashes. Some time afterward, the man reported that both ulcers were healed over, but one of them had again broken out. Upon inquiry, it was found that instead of simply filling the cavities, and leaving them alone without further attention, the man kept adding more each day, causing them to heal too quickly.

There is no doubt that, when used as directed, it will be found

a decidedly effective means of treatment. Its simplicity and safety make it deserving of a trial before resorting to regular treatment.

The following remedy is used by veterinary surgeons of my acquaintance as a remedy of great value, and is kept a secret. The point in using it is, to saturate a little tow with it, and push it to the bottom of the ulcer, so that it will touch every part of it. In about twenty-four hours the diseased part can be separated from the healthy flesh with the finger, from the top to the bottom, and taken out, when it is to be dressed as a simple wound:—

4 ounces accetate of copper (verdegris),
4 ounces sulphate of copper (blue vitriol),
4 ounces alum,
1 ounce white precipitate (white mercury),
2 ounces nitric acid,
1 pound honey.

Diseases of the Eye.

The eye, or organ of vision, is composed of three tunics, or coats, and of the same number of humors. To the external coat (sclerotic and cornea) it owes its form. The middle tunic is made up of the choroid, or vascular coat, of the iris, or the thin curtain suspended in the aqueous humor, and perforated in the center by an opening called the pupil, or pupillary opening, which in the horse is of an elliptical form; in man it is round. The inner coat is called the retina, or nervous covering, and is the terminal expansion of the optic nerve.

The humors are three in number, and they serve as reflectors of the light. They are: The aqueous humor, crystalline lens, and vitreous humor. The last is the largest, and occupies about four-fifths of the whole interior of the globe or eyeball. The appendages of the eye are the eyelids, eyelashes, and the membrana nictitans, generally called the haw, which is situated in the inner or lower angle of the eye. It is connected with the different muscles of the eyeball. By the contraction of the straight muscle of the eye, the haw is forced outward, and is one of the beautiful arrangements that nature has provided for the protection of so delicate and sensitive an organ. The eye is wholly covered by a thin membrane called the conjunctiva.

Simple Ophthalmia, or Inflammation of the Eyes,

Is a common disease among horses, and consists of inflammation of the conjunctival membrane covering the eye.

Causes.—It may be produced by many different causes, and perhaps the most common is from the introduction of a foreign substance into the eye, as a hay seed, or chaff pickle becoming

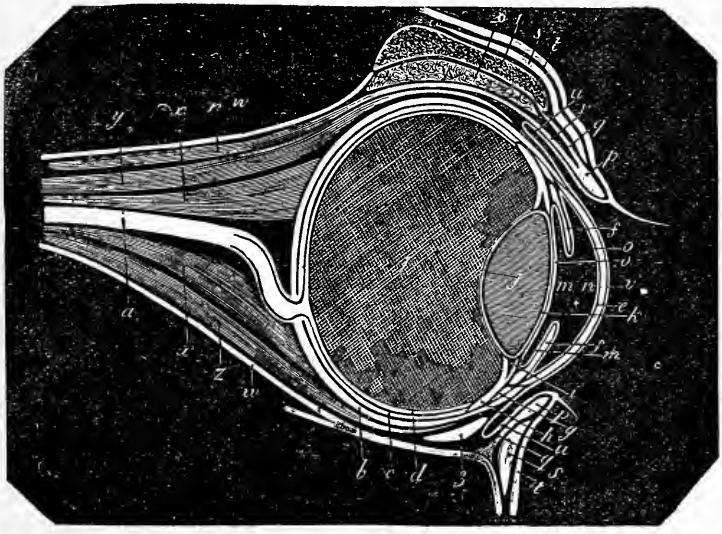


Fig. 853.

a, Optic nerve; *b*, Sclerotic; *c*, Choroid; *d*, Retina; *e*, Cornea; *f*, Iris; *g*, *h*, Ciliary circle; *i*, Insertion on crystalline lens; *j*, Crystalline lens; *k*, Crystalline capsule; *l*, Vitreous body; *m*, *n*, Anterior and posterior chamber; *o*, Membrane of aqueous humor; *p*, *p*, Tarsi; *q*, *q*, Fibrous membrane of eyelids; *r*, Elevator muscle of upper eyelid; *s*, *s*, Orbicularis muscle of eyelids; *t*, *t*, Skin of eyelids; *u*, Conjunctiva; *v*, Membrane covering cornea; *x*, Posterior rectus muscle; *y*, Superior rectus muscle; *z*, Inferior rectus muscle; *w*, Orbital membrane.

lodged in the external covering (cornea), or by direct injury to the eyes, as from the blow of a whip, or something of the kind. When from a blow or direct cause of injury, but one eye will be affected, while if from cold, etc., both eyes will be involved. It is also caused by allowing horses to stand in foul stables, especially in the summer months, whereby ammoniacal gases are generated,

proving very injurious to the eye-sight. It proceeds from exposure to cold, and is often an accompaniment of catarrh.

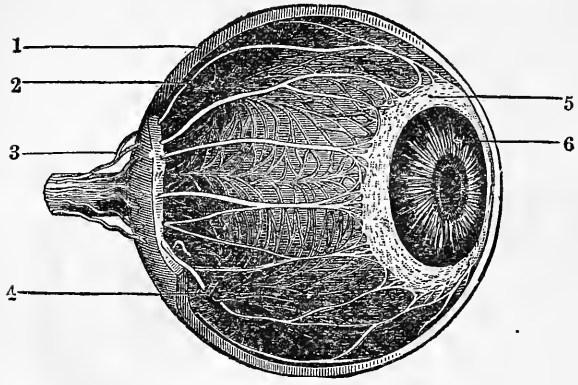


Fig. 854.

1, Sclerotic coat; 2, 4, Veins of the choroid; 3, Ciliary nerves; 5, Ciliary ligament; 6, Iris.

Symptoms.—The eyes are weak; the conjunctiva, or inner lining of the lids, inflamed; water running from the eyes; the lids partly, if not wholly, closed, according to the severity of the case. Bluish or white film, the result of inflammation, comes over the cornea, extending no deeper than the surface, and may vary from a slight cloudiness to entire opacity.

Treatment.—This must, in a great measure, depend upon the cause; therefore it is of the greatest importance to make a careful examination, especially if but one eye is affected.

If there is any foreign matter in the eye, remove it promptly, which can be done either by means of a feather or a pair of forceps. The eye should be fomented with tepid or warm water, and the horse kept in a darkened stable or loose-box; next, the eye may be kept constantly moist by means of a sponge or cloth, wet with tepid or cold water, and applied over the eye; or better, Goulard's extract, used in the proportion of 1 drachm to a pint of water. If accompanied by great pain, the following lotion should be applied around the eye several times a day:—

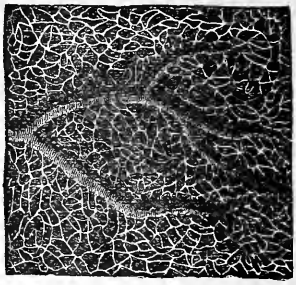


Fig. 855.—Capillaries of the vascular layer of the retina.

1 ounce watery infusion of opium,
4 ounces Goulard's extract,
12 ounces water.

When the cloudiness or opacity of the cornea is tardy in being removed, the eye should be stimulated daily with the following collyrium:—

5 grains nitrate of silver,
1 ounce distilled water.
Apply by means of a feather or camel's-hair brush.

If he must be used or kept in the sunlight, the eye should be kept covered with a blue cloth tied loosely over it. It is very important to attend to any such form of local inflammation promptly; not only treating properly, but, if possible, take him from all work, since, if neglected, or the inflammation aggravated by heating the blood, the sight is liable to be destroyed, or run into periodic opthalmia. It is somewhat wonderful how much injury the eye will recover from, when treated with any kind of care.

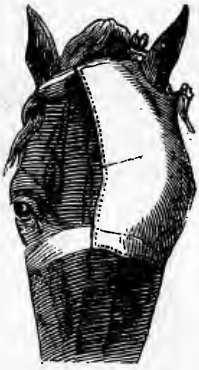


FIG. 856.—Good method of covering the eye.

Twenty years ago, when driving horses without reins was regarded as a great feat, in training them to drive in this way, it was sometimes necessary to use the whip very severely over the head, when the eye was liable to be struck, and so seriously injured as to close it and make it entirely white from inflammation in a short time. Yet, in every case, by bathing with cold water, keeping in a dark place, and if moved, keeping the eye covered with a cloth, in a few days the eye entirely recovered.

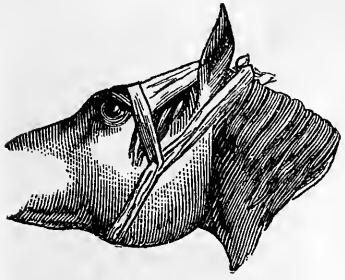


FIG. 857.—Reversed view of the above.

Once, while training Gifford, one of my old pair of trained horses, he ran incidentally against the corner of a stair, striking the eye so severely as to instantly destroy his power of sight; the eye was entirely closed, and red with inflammation. In this case I simply kept the eye covered with a cloth kept constantly wet with water, in which was tincture of aconite in the proportion of about 40 drops to half a pint of water. There was entire recovery within a week. This mild

preparation has proved for me very efficient in reducing local inflammation.

Specific, or Periodic Ophthalmia,

Is the most severe affection to which the horse's eye is liable, and is very common in this country. The parts principally and primarily involved are the internal structures of the eye, and the changes which occur vary in degree to the severity of the attack.

Causes.—The great cause of this affection can be traced to an hereditary predisposition, always ready to burst forth when exposed to certain exciting causes, such as injuries of any kind, as before explained, being kept in very dark and ill-ventilated stables, and then suddenly exposed to the glare of a hot sun; and, like simple ophthalmia, it may follow continued exposure to cold.

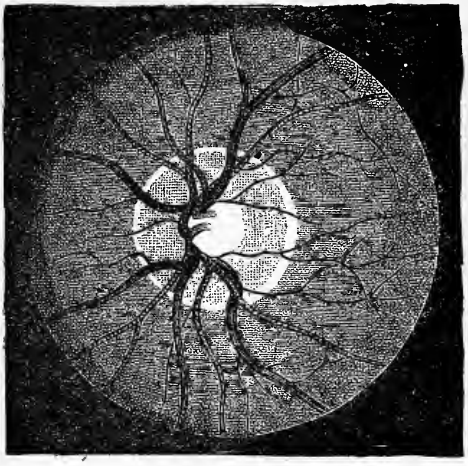


Fig. 858.—Physiological papillæ, as seen with the ophthalmoscope.

Symptoms.—Among the first symptoms is a watery discharge from one or both eyes, and on being exposed to the sunlight he exhibits a peculiar uneasiness, with a partial closure of the affected eye. As the disease advances, the eyelids become swollen, and if turned upward, the conjunctiva appears reddened and injected; the eye looks smaller, and retracted into its socket; the interior of the eye reveals a peculiar muddy or turbid appearance, showing floating flakes, and a yellowish or whitish deposit at the bottom of the chamber. Fig. 860 is designed to show, on an enlarged scale, something of this change. The symptoms are very like those of simple ophthalmia, and often leads to the supposition that the eye has received a blow or other injury.

The above symptoms become more and more aggravated, and

the patient becomes affected constitutionally; the circulation is increased, the mouth hot, and the appetite impaired. These symptoms may continue for several days, and then gradually disappear, or they may be prolonged for weeks, and end only with the destruction of the eye. A prominent and well-marked symptom of this disease is its shifting from one eye to the other; in many cases, one eye has no sooner recovered than the other becomes affected. At other times, recovery is rapid, and to all appearances the eye looks perfectly healthy; in a short time, however, the disease returns, and often with increased severity. These occurrences or shiftings take place in from three weeks to a month or more. As the disease advances still farther, the eye begins to clear, the cornea becoming transparent, leaving a slight muddiness in the anterior part (chamber) of the eye; the pupil diminishes in size, and the disease gradually terminates in more or less opacity of the chrystalline lens or its capsule, constituting cataract.

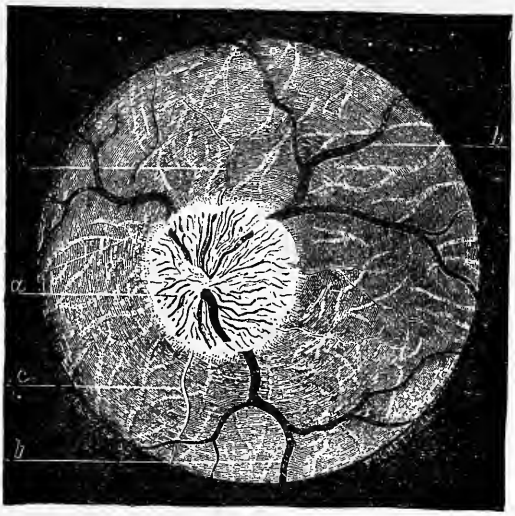


FIG. 859.—Inflammation of optic nerve.

a, Papilla of the optic nerve conjested; *b*, Enlarged veins, connected by exhudation round the papilla; *c*, rather diminished arteries.

Treatment.—As a general rule, the treatment of specific ophthalmia is very unsatisfactory, but still medicinal remedies are found beneficial in palliating the disease. The horse should be placed in a comfortable and darkened loose-box, with a plentiful supply of pure air. A brisk dose of purgative medicine should be administered, and if much constitutional fever is present, ten drops of the tincture of aconite should be given every three hours,

until six or eight doses are given. Bleed from the facial vein, and follow by fomentations of hot water to the eye. After the third or fourth day, cold applications are preferable to hot. The extract of belladonna may be applied around the orbits, and also administered internally, in doses of two scruples, three times a day. When the acute inflammatory symptoms are somewhat abated,

FIG. 860.—Generalized atrophical choroidites.

a, Papilla of the optic nerve, preserving its rosy color; *b*, *c*, Atrophied choroid, showing the white tint of the uncovered sclerotic; *d*, *e*, Blood-vessels of the retina; *f*, Pigmentary deposits of the choroid.

the absorption of the effused products should be aided by a stimulating collyrium, as,—

10 grains sulphate of zinc,
1 ounce distilled water,

Or any of the eye waters advised under that head.

The following simple treatment, used by a very successful practitioner, has by special request been written out for me:—

"When the lids are swollen, and not due to any disease, such as Pink Eye, etc., but to a cold, and injuries of numerous descriptions, the eye should first be bathed off with hot salt water for a few minutes, then turn the lower lid down and drop on the lid and eyeball, with an eye-dropper, the following collyrium:—

"10 grains sulphate of atropio,
1 drachm sulphate of zinc,
6 ounces aqua rosae,

"Drop on the diseased eye 15 to 20 drops two to three times a day. This remedy is a certain cure in most all eye-troubles.

"In diseases of the eye due to liver complaint, first give a strong cathartic combined with 1 to 2 drachms of calomel, and treat the eye as above."

Amaurosis, or Glass Eye,

Consists in either partial or complete paralysis of the optic nerve, or its terminal expansion, the retina.

Causes.—Injuries to the brain, causing an extravasation of blood upon the deep origin of the special nerve of sight (optic), from disease of the internal coat of the eye (retina). It occasionally occurs as a sequel of stomach staggers or indigestion. We have also known it to occur in pregnant mares. Percival mentions several cases of amaurosis occurring in mares with foal, where vision was perfectly restored after parturition.

Symptoms.—The eye has a peculiar glassy appearance; the horse carries his head very high, and is continually moving his ears, and his action is high, lifting his feet as if he were stepping over some obstacle. He is easily alarmed by any noise. The pupil is dilated, and loses its natural elliptical form. If the glare of a lighted candle is brought to bear upon the eye, the pupil refuses to contract, thus showing that nervous influence is lost.

Treatment.—The horse should have rest, and a strong dose of purgative medicine given. If supposed to arise from effusion or pressure on the nerve (optic), blisters and setons to the poll are recommended, and diuretics should be used. In some instances the powdered nux vomica, in doses of one scruple twice a day, has been used with advantage. If amaurosis has continued for a lengthened period, it is incurable, and treatment in such cases would be entirely useless.

Cataract

Is the name applied to a deposition of a pearly white substance within the eye, and is a very common affection in this country. It consists in an effusion of lymph, either on the middle humor (crystalline lens), or on its capsule, and is variable in size, sometimes not larger than the head of a pin, while in other cases it covers the whole lens.

Causes.—It is generally a result of repeated attacks of specific ophthalmia, or it may even supervene upon a first attack; it may follow a severe injury to the eye.

Symptoms.—The eyesight is either partially or completely gone, and when covering the greater part of the lens, it is easily known by its pearly white appearance. When small, it is somewhat difficult of detection; the eye is smaller than in health, and the pupil becomes greatly contracted when exposed to light. It may be detected by placing the animal in a bright light, and carefully examining the eye; if the eye appears smaller than the other, it indicates something amiss with it. He should then be placed in a darkened stable, and allowed to stand quietly for ten or fifteen minutes before being subjected to an examination. Stand in front of him, and bring a lighted candle close up to the front of his eye, when any alteration in the structure of the lens can be readily detected.

Treatment on the horse is useless, as when permanently established, it cannot be removed. When the cataract is confined to one eye only, it interferes but little with the horse's usefulness for ordinary work.

The cornea is frequently injured from the puncture of a nail, allowing the aqueous humor to escape, and perhaps injuring the crystalline lens, completely destroying vision. When the injury is confined to the cornea, the humor may be reproduced. The part should be diligently bathed, either with hot or cold water, and the fomentations must be applied several times a day; and the eye supported by means of a wet sponge or cloth, which tends to subdue the acute inflammation and allay the pain, and by keeping the eyelids closed, it supports the lacerated parts.

After a few days it may be necessary to stimulate the part,

when any of the stimulating applications recommended for simple ophthalmia may be used.

The membrana nictitans, or haw, sometimes becomes enlarged, the result of an injury, or from being implicated in other diseased conditions of the eye. Even in its healthy state, we have known it mistaken (by ignorant persons) for an abnormal structure, and barbarously removed. It is not an unusual circumstance to hear persons boast of the rapidity with which they can remove this beautiful and most essential appendage to the eye.

Dropsy of the Belly (Ascites).

Ascites consists of a collection of serous fluid in the cavity of the belly. It is not very often seen, unless in connection with some other disease.

Causes.—It is usually the result of chronic peritoneal inflammation, or a sympathetic extension, or accompaniment of "water in the chest" (hydrothorax), chronic disease of some important organ contained in the belly, which it invests. Occasionally it occurs in conjunction with enlarged liver or spleen. Sometimes also from impeded circulation, consequent on abnormal tumors pressing on some important vessels; and, unquestionably, as in the human subject, some animals have a dropsical tendency (diathesis).

Symptoms.—The animal is observed to be dull and inactive, the bowels are costive, and the urine scanty; he is always thirsty, watery swelling appears between the fore legs, which soon extends backward along to the sheath or udder; the belly is large, and when struck, emits a dull, heavy sound. As it goes on, the breathing becomes rapid, and the pulse quick and small, the thirst intense, the appetite fails, the enlargement of the belly becomes more perceptible, the external swelling greater, and the breathing much increased; as death approaches, the pulse becomes imperceptible, and as Blaine remarks, "the peritoneal inflammation produces colicky symptoms frequently, and in this way being occasionally but little disturbed, and at other times very ill, a few active symptoms carry off the poor beast."

Treatment.—When the watery effusion is extensive, few cases recover; however, much can be done to arrest it in the early stages; the prospects of recovery, of course, depend a good deal on the cause of the complaint: when accompanied by hydrothorax,

it almost invariably proves fatal. The strength from the first must be harbored, stimulants must be given from the beginning; open the bowels by an active purgative, smart friction being frequently applied to the belly, or if the swelling is considerable, it should be supported by bandages; should the state of the patient permit, walking exercise should be persevered in. The following ball should be given daily:—

1 drachm iodine,
1 drachm iodide of potassium,
Linseed meal and soft soap sufficient to form a ball.

Occasional doses of sweet nitre and warm beer should be given. Free scarifications with a lancet or sharp knife should be made in the swelling.

Tonics should be more early used than they generally are; a very good tonic ball in these cases consists of—

2 drachms sulphate of iron,
1 drachm iodine,
Made into a ball with linseed meal and soft soap. Or,

2 drachms ginger,
2 drachms gentian,
2 drachms sulphate of iron,
Molasses sufficient to make a ball.

When medical treatment fails, temporary relief may be obtained by *tapping*, which consists in puncturing the belly, in the line between the navel and the sheath (or udder), taking care not to injure the bowels, or any important vessels, in doing which the belly must be tightly bandaged, and kept compressed.

Anasarca, or Swelled Legs.

If plethoric, fat legs and sheath swelled. When standing in stable without any of the usual symptoms, should first be given a strong cathartic, and twenty-four to thirty-six hours after give the following powders in the feed morning and night:—

1½ ounces sulphate of iron,
2 ounces powdered digitallis leaves,
6 ounces nitrate of potass.,
½ ounce powdered nux vomica.
Make into twelve powders, and give in feed morning and night as above directed, until the animal's feces becomes of a blackish color, then stop.

By this time the horse should be well. If the case is weak and debilitated, omit the physic and powders, and give good, nutritious food. In the meantime the horse in either case should have gentle exercise.

It is bad practice to bandage. The application of bandages with stimulating liniment prevents the free circulation of the

FIG. 861.—The leg in its natural condition.

FIG. 862.—The leg as it appears when "filled" or swelled.

blood, thereby causing not only debility of the capillaries, or small blood-vessels, but also irritates the skin. It in all cases gives temporary relief, but not a cure. The treatment before given is the only one to be depended upon.

INFLAMMATION OF THE VEINS (PHLEBITIS).

Owing to the practice of bleeding horses for all ailments, which is still very common among people through the country, phlebitis is not uncommon. It consists of inflammation of the coats of the vein, involving the surrounding cellular tissues also.

Causes.—When it occurs, it almost invariably follows the operation of bleeding, arising from some mismanagement in performing it, or securing the integuments after. Rusty fleams, care-

lessness in pinning it up,—as in pulling the skin out, allowing blood to filtrate the cellular tissues,—bringing the edges unevenly together, or, as in cases we have known, pinning the vein itself to the skin. Certain states of constitutional predisposition of the veins to take on inflammatory action are said to exist.

Symptoms.—It is easily distinguished by the inverted edges of the wound, which are red and swollen, and discharge thin serum, which soon gives place to pus. The vein above the incision is hard, hot, and tender, and considerably enlarged. The swelling extends upward to the head; the inflammation extends to the surrounding tissues; the side of the neck is swollen; the neck is stiff, and the head extended. The systomatic fever runs high.

Treatment.—The head should be tied up, and almost constant fomentations of hot water applied for several days. The lips of the wound should be touched with the cautery or lunar caustic. A full dose of purgative medicine should be given. When the acute fever has subsided, it should be blistered throughout its entire extent, and repeated if required, the head being kept elevated, and his feed placed within his reach.

These cases often terminate in complete obliteration of the vein; but in course of time the smaller vessels of the neck enlarge, and take the place of the lost jugular. He is not suited to be turned to pasture, as the head is apt to swell. He can never after be passed as a sound horse.

Thrombus.

Thrombus is the name given to a round tumor which sometimes occurs around the puncture made in bleeding.

Causes.—It is usually the result of pinning up the wound by drawing the skin out, allowing the blood to be extravasated into the cellular tissues; also from the opening in the skin not being opposite the opening in the vein, or too small to allow the blood to escape freely; often from the tissues being irritated by repeated striking of the fleam, or "perhaps from spontaneous inflammation and serous effusion in the divided integuments and membranes themselves."

Symptoms.—It is easily recognized by the appearance of a round full swelling surrounding the opening a short time after bleeding.

Treatment.—It should be re-opened, the coagula squeezed out, and the edges of the wound again brought together, and a pad, or sponge, saturated with a strong solution of Goulard's lotion, or cold water constantly applied for an hour at a time, the pad being supported by a broad bandage round the neck. The head must be tied up for at least twenty-four hours. It usually subsides in a day or two. Should swelling remain, it should be blistered and treated as in phlebitis.

Lampas.

Lampas is the name given to a slight enlargement of the bars or ridges on the palate behind the incisor teeth. It is mostly confined to young horses, and is a natural congestion of these parts, consequent on the shedding of the teeth. It is not so much a disease as a natural and salutary process, which in general is best let alone, and in which cruel remedies, such as firing, should never for a moment be thought of. If much inflamed, a slight scarification, with sloppy feed for a few weeks, will suffice to remove it. In older animals, similar swellings are sometimes seen arising from indigestion; a slight physicking will generally remove them, without resorting to such *outré* practices as "cutting out the lampas."

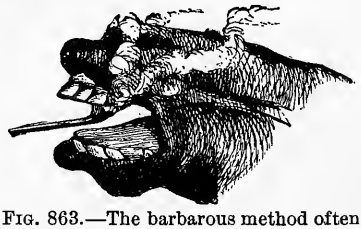


Fig. 863.—The barbarous method often resorted to, of burning out the lampas.

Diseases of the Skin.

The skin is a membrane of variable thickness, which covers the whole body, and is reflected inward by all the natural openings, so as to line, by its internal reflections, the eye, the nasal cavities, the mouth, etc., etc. Skin diseases in the lower animals generally do not prove so inveterate as in human beings.

Surfeit

Is an affection of common occurrence among horses in the spring and summer months, and is an eruptive disease, showing itself in the form of small tumors, or pimples, and extending along the neck, or over the whole body.

Causes.—It very often proves a sequel of some derangement of the digestive organs; as from feeding for a lengthened period on one kind of food, and more particularly if it is of a stimulating or heating nature. It is also apt to occur in horses that are in high condition when subjected to violent exercise, causing them to sweat freely, and then being exposed to sudden chill; in this form it is often met with in colts, when being first put to work.

Symptoms.—It appears suddenly; small pimples or tumors arise on different parts of the body and neck, and particularly underneath the mane; in some instances they disappear rapidly by absorption, while in others they burst and discharge a thin fluid; the hair comes out, and small scales form, which are easily pulled off. At times this affection proves very irksome and troublesome to the horse, causing him to rub violently against his stall, or bite at the parts affected with his teeth. In its simple form it appears to inconvenience the animal but little, and is generally easily removed.

Treatment.—In the first place the food should be changed, and a mild purgative given, as Barbadoes aloes, four to six drachms; the kidneys should be made to act freely, and for that purpose the following ball may be given daily for four or five days:—

3 drachms nitrate of potass.,
1 scruple camphor,
1 drachm oil of juniper,

With soft soap and linseed meal sufficient to form an ordinary sized ball.

In inveterate cases, small doses of calomel and opium may be used with success. The eruptions should be thoroughly cleaned with soap and water, and afterward dressed with a mild solution of the chloride of zinc, about twenty grains to a pint of water. He should have regular exercise and good grooming, using the wisp instead of the curry-comb. Surfeit differs from mange, in not being contagious.

Urticaria, Nettle Rash, Hines, etc.,

Shown by pimples, or elevations, on the skin, may go and come within twenty-four hours, generally due to a disturbance of the stomach, such as gastric derangement. In any case not serious, the symptoms are as follows: The horse probably not having

taken well to his feed (apparently all right), a few hours later the whole body will be covered with little erruptions, or elevations, all over the skin.

The treatment for it should be as follows: Give a cathartic, and have his body well bathed with strong salt and water. This bathing may be repeated two or three times within twenty-four hours; feed lightly, and reduce the amount of grain feed.

This disease is caused by over-feeding, and want of exercise. Is always common to fat horses, and makes its appearance during the spring and summer months.

Mange

Is another eruptive disease, and is very contagious, and is caused by the repeated attacks of minute insects which burrow into the skin; these insects are called *acari*, and can be easily seen by means of a magnifying glass. (I include illustrations of three varieties of mange parasites.)

Fig. 864.—Mange parasite.

Causes.—In the majority of cases it is the result of contagion, either from coming in direct contact with a mangy horse, or it may be carried by means of his harness or blankets. It is also generated by uncleanliness and insufficient nourishment; the skin, from being allowed to become covered with dirt, loses, in a great measure, its highly important function in maintaining an animal in health.

Symptoms.—Generally, the first symptom observed is the animal rubbing his head and neck against the stall or manger; small pimples appear, and the hair falls off; the skin is dry and hard, and upon the hardened patches may be seen small red spots. A horse affected with mange is kept in a constant state of irritation, which soon reduces him in flesh.

Treatment.—He should be separated from other animals, and thoroughly washed with soap and water every second or third day, afterwards dressed with the following application:—

4 ounces linseed oil,
4 ounces oil of tar,
3 ounces sulphur.
Mix, and rub well into the affected parts.

No. 2.—4 ounces oil turpentine,
4 ounces oil tar,
6 ounces linseed oil. Mix.

Alternately with the above application mercurial ointment may be used. The horse should have a generous diet, and moder-

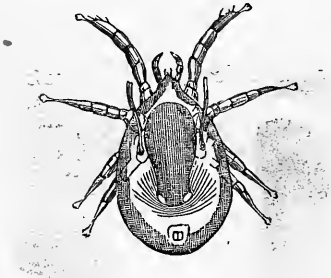


Fig. 865.

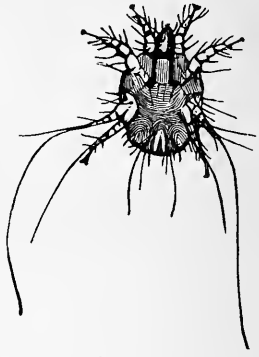


Fig. 866.

Mange parasites.

ate and regular exercise. In inveterate cases arsenical solutions are beneficial, but must be used with caution. All clothing, har-

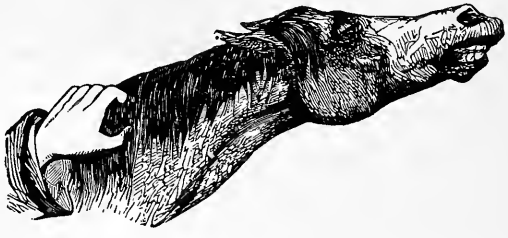


Fig. 867.—One of the tests for mange.

ness, etc., which has been used on a horse affected with mange, should be thoroughly cleansed before they are used again.

The following is recommended by a very successful veterinary surgeon:—

"Take the horse in the sun, and scrub him thoroughly all over with castile soap and water, then wash him well from head to tail with gas water, in which put 2 drachms white hellebore to the gal-

lon. He must now be put in another stall, distant from the one in which he has been standing. Thus treated, it rarely requires more than one washing to effect a permanent cure. The harness should be thoroughly scrubbed, and put away for six or eight weeks. These precautions are necessary to success in this otherwise troublesome disease."

Hen Lice.

It is not known to many that hen lice and common human body lice grow on horses with great rapidity. Hen lice especially are sometimes very troublesome. Prof. Bouley, in 1851, first called attention to them.

Symptoms.—When a horse is taken suddenly with irresistible itching, sometimes acting half frantic in his efforts to relieve himself by scratching, biting, striking up with his hind feet, and stamping, examine him carefully for hen lice. This trouble is to be particularly looked for where hens have access to, or roost in, the stable. There is liable to be an eruption of very small vesicles under the skin, the hair falling off in small, circular spots. In a few days these spots are liable to extend.

When neglected, or not attended to, the horse is liable to lose his appetite, grow thin and weak, on account of the constant annoyance and irritation to which he is made subject.

Treatment.—Remove the cause. Hens should never be kept near a horse stable, nor allowed to roost in it. Wash the animal with a decoction of tobacco, or staphysgia; whitewash the stable, and observe cleanliness. If subject to human lice, and the animal is poor, with long hair, clip it off, and wash the animal with a decoction of stavesacre, one ounce of the powdered seeds to a pint of water, taking care that the animal does not lick himself for some time after the remedy has been applied.—*Williams.*

An ounce of arsenic to a pail of soft water, with which wash the horse thoroughly in a warm place, is claimed to be a sure remedy for destroying either kind of lice.—*Somerville.*

Ring-Worm.

This is not a common disease among horses. It consists in a parasitic growth of organic cells in the surface of the skin. Ringworm is a common affection in man, and is said to be communicable from him to the lower animals. Like other diseases of the skin, it is also generated by uncleanliness,

Symptoms.—The hair falls off on various parts of the body, especially about the face, eyelids, cheeks, neck, and thighs, leaving small and apparently ulcerated patches, which appear white and scaly, and have a peculiar tendency to spread; the animal loses flesh, and his coat becomes dry and dirty looking.

Treatment.—Ring-worm, if attended to in the early stage, is easily cured. The affected parts should be well cleansed, and touched with a mild caustic, and dressed daily with the following ointment:—

1 drachm iodine,
1 ounce lard.

Or, in place of the ointment, a liniment composed of—

1 ounce sulphur,
6 drachms iodide of potassium,
3 drachms iodine,
10 ounces oil of tar;

May be used daily.

Scratches, Mud Fever, and Cracked Heels

Are very common occurrences among horses, especially in the spring and autumn months, and the hind legs are oftener affected than the fore ones.

Causes.—They are very often the result of keeping horses standing in damp or filthy stables. Clipping the hair from off the legs is regarded as a very serious cause of scratches, as it leaves the skin so bare that it cannot as readily resist the effects of irritants of any kind as when protected by its natural covering; but the most common cause is the habit of washing the legs with cold water, and not drying them thoroughly afterwards. The sebaceous glands in the hollow of the pasterns become inflamed, their secretion is increased, the skin cracks and discharges an ichorous matter.

Symptoms.—They usually cause lameness, more or less severe, according to the severity of the attack, always most painful for the first few steps. The hollow of the pasterns are swollen, red, hot, and tender, with transverse cracks which open at every step, and often bleed, especially in cold weather. (A good illustration of this is shown by Figs. 868 and 869.

Treatment must be regulated according to the extent and

duration of the disease. In all cases the horse should be kept in a dry place, with an abundance of clean litter; the heels should be thoroughly cleansed, and if painful, poultices of linseed meal applied for several days. If the horse is in high condition, and the legs much swollen, a full dose of purgative medicine must be given, followed by two or three doses of diuretic medicine, as,—

3 drachms nitrate of potash,
3 drachms resin,
With soft soap sufficient to make an ordinary sized ball.

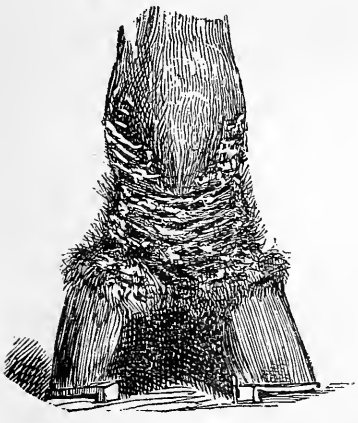


Fig. 868.—A very bad case of scratches.

Fig. 869.—An ordinary case of scratches.

After poulticing, the parts should be dressed once or twice a day with the following lotion:—

6 drachms sulphate of zinc,
1 ounce acetate of lead,
1 pint water.

Occasionally scratches prove very troublesome and difficult to cure; if the ulcerations extend, it will be necessary to change the dressing, and dry powders, such as oxide of zinc, calomel, etc., should be tried.

The following is included from a very successful practitioner, as his favorite treatment:—

"First wash the parts off well with warm water and soap, dry thoroughly, and apply the following ointment twice a day:—

"3 ounces oxide of zinc,
2 drachms carbolic acid,
10 ounces lard. Mix.

"If the case is serious, internal remedies must be resorted to. First give a laxative, then feed twice a day one of the following powders:—

"1½ ounces sulphate of iron,
3 ounces gentian root, pulverized.
"Make into eight powders."

The prescription given below was obtained by the writer under the following circumstances, which will illustrate its value: When traveling through Ohio, during the winter of 1866, in consequence of deep mud, Turco's feet became badly affected with scratches, or cracked heels. In spite of all that could be done, the ulcerations continued to spread, in connection with deep cracks across the heels, which would bleed whenever he was moved. Persons who had been in the army who saw him, stated that his feet were affected as were those in the army, when they lost their hoofs. While trying to drive him one morning, a drunken fellow, who introduced himself as the local horse doctor, claimed that he had a remedy that would cure the horse completely in two weeks. Having no confidence whatever in the fellow, I paid no attention to him, but was finally induced, mainly to free myself from his annoyance, to buy the prescription. Next day he followed me to the adjoining town, when he again assured me, if I would try the medicine, he would warrant it to cure the case. To get rid of him, I finally told him he might go and make as much medicine as he pleased, and I would pay him for it. He prepared the medicine, and it was applied by the groom to the horse, as directed, that night. Next morning there was such a decided improvement that I was encouraged to persevere in its use, and in two weeks both legs were entirely cured.

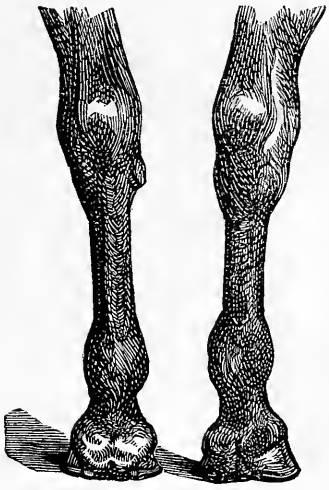


FIG. 870.—Showing the legs in healthy condition.

I regard the prescription very valuable, and mention this fact as proof of its effectiveness:—

2 ounces resin,
2 ounces copperas,
2 ounces alum,
1 ounce beeswax,
1 pint tar,
Tallow, size of hen's egg.

Boil over a slow fire, skim off the filth, and add a handful of the scrapings of sweet elder. When cool, it is fit for use.

Another remedy, for which much is claimed, is the following:—

6 ounces sweet oil,
2 ounces borax,
2 ounces sugar of lead. Mix.

First wash clean with soft water and castile soap. When dry, apply once a day.

Sometimes a horse will irritate or break the skin by getting a rope or strap around the leg, which, if neglected, will cause a great deal of trouble by inducing scratches or cracking of the skin. The leg should be immediately poulticed with flax seed meal, until all inflammation subsides. The horse in the meantime should have bran mashes, with a small dose of physic.

If, however, it has been neglected, and scratches or ulceration of the skin follow, it must be treated the same as for an ordinary case of scratches. I have found that tying a thickness or two of flannel loosely around the part for a few days after treatment, is very beneficial.

Mr. J. F. Beaver, of the firm of Beaver & Williams Livery, Battle Creek, Mich., gave me the remedy below, which he claims to be the best thing he ever used for cracked heels. That, twelve years ago, he bought a very fast trotter that was regarded worthless on account of his heels cracking so badly that he could not be speeded. Every effort to cure him previously having failed, a careful application of this remedy cured him perfectly. He has used it on a number of bad cases since then, always with success. He thinks it the best ever used for the cure of cracked heels, and would not be without it for one hundred dollars. The prescription was obtained of one of the best known and successful veterinary surgeons in the country. Mr. B.'s statement was fully corroborated by friends who were acquainted with all the facts, and is un-

doubtedly a remedy of great value. I include the prescription, with directions, as given me:—

"The immediate causes of cracked heels, though various, may be summed up under the general heads of neglect and mismanagement. Any very sudden change from heat to cold, or from cold to heat, is very likely to derange the secretions of the skin. Hence washing the legs, especially with hot water, is very apt to induce cracked heels. The use of caustics and active astringents frequently does irreparable mischief. "Gummy-legged" horses, *i. e.*, those whose legs are disposed to fill, are predisposed to cracked heels. Though this affection is usually associated with neglect or mismanagement, we occasionally find it in animals receiving the best of care. Horses well groomed and regularly exercised sometimes suffer from cracked heels. The process of sweating induces the affection. The sweat runs down into the hollow of the heels, and the evaporation of the perspiration, strongly impregnated as it is with the salts of the blood, may possibly lead to disease. In regard to treatment, first, the cause, if it can be discovered, must be removed. The heels should be washed every night with warm water, and carefully enveloped in flannel bandages. Soap, though commonly used along with the water, is injurious, because the alkali contained in it spoils the material thrown out for the reparative process. Ointments of various kinds are used. The following, if properly prepared, is an excellent remedy: Take of oxide of zinc, one drachm; Veterinary Cosmoline, one ounce; powdered gum benzoin, ten grains; camphorated spirits, one drachm; mix thoroughly. The mode of application is a matter for attention. It should be gently rubbed upon the cracks with the finger, so as to distribute it in a moderately thick layer over the whole of the affected part, and to insinuate it as much as possible under any crusts that may be formed in the disease. Once properly applied, it will prevent further crust from collecting, while it serves the several purposes of a new cuticle to the abraded skin, a water-dressing, and a barrier to the oxidizing action always present in inflammation. The heels must not be washed after the application of the ointment; they may be wiped with a soft napkin as much as may seem necessary, but when the ointment is once applied, it should not be removed by washing without good reason. Or the following liniment may be successfully applied: Take of Goulard's extract, English glycerine, and skunk oil, two parts each; liquor ammonia, half a part; mix. Agitate before using, and apply with a soft brush twice a day."

See also hoof ointment on page 983, which Prof. Gamgee, of Edinburgh, Scotland, says is one of the very best remedies for scratches or cracked heels.

Grease.

This may be considered as an aggravated condition of scratches, and is induced by the same general causes. In the early stage, it

consists in inflammation of the sweat glands, followed by an offensive, white, oily discharge from the heels. The acrid character of the discharge often causes large portions of the skin to slough away, leaving ugly sores behind.

Symptoms.—There is generally more or less swelling of the legs, which, if not speedily relieved, is followed by a discharge; the hair falls off, and the skin is reddened and inflamed. The parts are very painful and hot, and in many cases the least pressure of the hand will make the horse twitch up his leg, and continue to hold it up for some time. In other cases, when made to move about in his stall, or when taken out of his stable in the morning, he will keep twitching up his legs as if he were affected with string-halt. Exercise appears to relieve the pain, as after being walked for ten or fifteen minutes, he goes quite free. As the disease advances, the skin cracks, and the discharge increases, becoming more and more purulent and offensive. (A good illustration of its appearance at this stage is given in Fig. 871.) The swelling increases, not being confined to the heels, but involving the front of the fetlock joint, and in some cases extending upwards to the hock. The cracked condition of the legs and heels undergoes a change of structure, and fungoid granulations spring up similar in form to a bunch of keys; this is called the "grapy stage," which may vary considerably in structure, at one time being very vascular, bleeding readily when touched, in other instances it loses its vascularity, and becomes hard and horny; from between the crevices of the grapes an ichorous, glairy discharge continues.

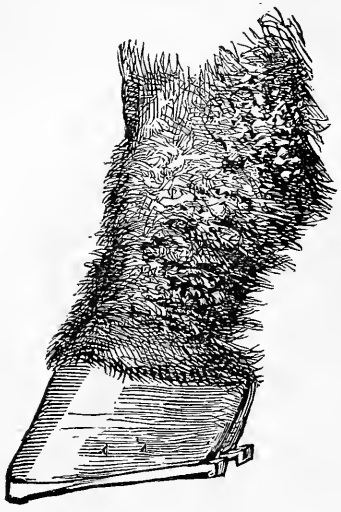


Fig. 871.—A bad condition of grease.

There is a small parasite, called *sarcoptes hippopodus*, which is sometimes found in chronic grease, an illustration of which I here give largely magnified, from *Williams*, who says this class of insect may be also common to mange. The disease induced by it is called

foot mange. Attention is drawn to a horse with this disease by his rubbing his fore legs, or striking constantly with the hind ones during the night. The seat of the disease, and the ready detection of numerous parasites in clusters where crusts or scabs form about the horse's heels, suffice to enable us to diagnose the malady.

Treatment.—Without cleanliness, all medicinal remedies are useless. The heels should be washed with soap and water every day, and the general comfort of the animal attended to. If the patient is in high condition, a dose of purgative medicine must be given, and the animal restricted to a cooling diet, as carrots, bran, etc.; or, if in summer, green food is preferable. The following lotion may be applied daily, which, in mild cases, will generally suffice:—

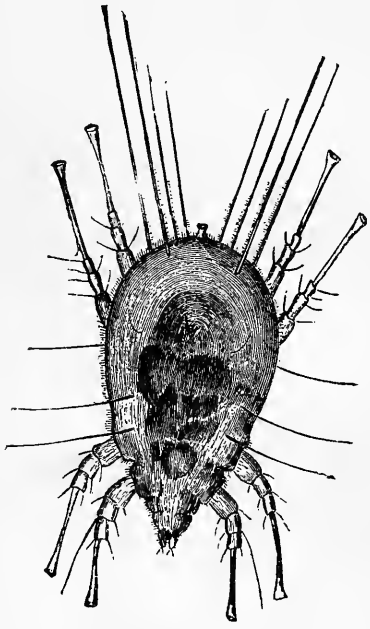


Fig. 872.—Sarcoptes hippopodus.

30 grains chloride of zinc,
1 pint water.

In cases of long standing, the hair must be cut off, and the parts softened with linseed meal poultices; to which may be added charcoal, yeast, or bleaching powder. After removing the poultices, dust the parts over with oxide of zinc powder, or apply the following ointment every morning, to be washed off at night:—

1 scruple acetate of lead,
4 drachms soft soap,
4 drachms lard.

As in other skin diseases, small doses of Fowler's solution of arsenic is generally attended with beneficial results.

Tumor on the Shoulder.

Very often, in consequence of continued chafing of the collar, which may be neglected, serious inflammation is caused, sometimes followed by a deep cyst of matter, beneath the large flat

muscle which covers the front of the shoulder. The tissues around the part become thickened and indurated so that it is frequently difficult to detect any fluctuation of matter, yet it may be assumed, when there is considerable swelling, that has continued for some time, and matter exists, there will not be recovery until it has been removed. In slight cases only, a little nut-like induration usually forms without matter.

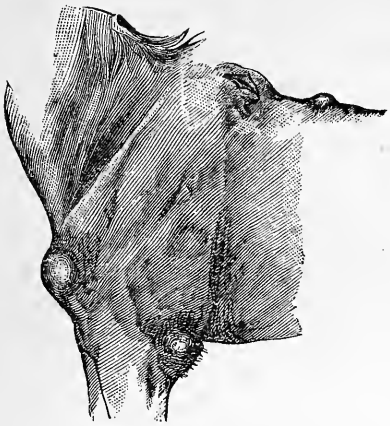


FIG. 873.—Showing tumor on elbow and shoulder.

Treatment.–In cases where injury is recent, if the horse must be used, change the collar, so that, if possible, no chafing or pressure will be brought upon the part. Bathe the shoulder with hot and cold water according to the severity of the case, or two or three thicknesses of wet blanket may be slung over the shoulder. Bathing the part thoroughly with arnica which has been reduced about one-third with water, is a favorite remedy for chaffs and bruises. The following liniments for external inflammation are very good:—

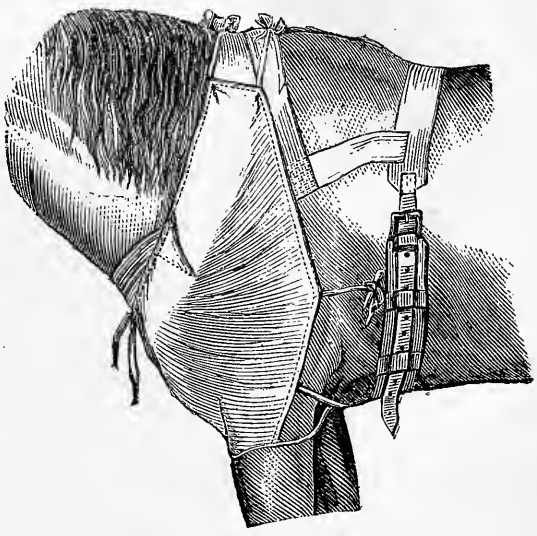


FIG. 874.—A good method of covering shoulder with wet cloths or poultices, when seriously chaffed or inflamed.

2 ounces worm-wood,
1 quart New England rum.

Steep the worm-wood in the liquor, and apply the preparation thoroughly to the shoulder. Or,

1 ounce Goulard's extract,
2 ounces vinegar,
3 ounces spirits of wine,
1½ pints water.

Cover the part with two or three thicknesses of cloth kept wet with this.

An excellent remedy for bruises and soreness, caused by kicks, etc., is made by putting all the camphor into whisky which it will cut or dissolve. Bathe the part thoroughly with this.

If a tumor forms, open it with a knife, and treat like an ordinary wound; or the matter can be drawn off with a trochar and canula, until the sac is reduced, when it can be opened. If a solid tumor forms, a straight verticle incision is to be made through the skin over the mass, and dissected out, when the skin is to be brought together with stitches, and treated as a simple wound.

Tumor on Point of the Elbow

These are, in most cases, caused by the heels of the shoe when the horse lies with his fore limbs bent under him.

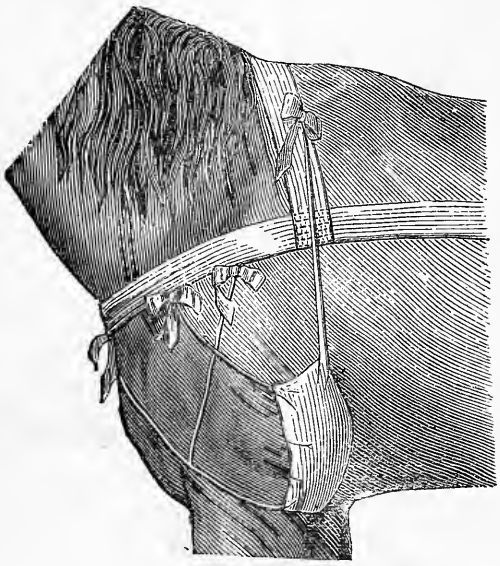


Fig. 875.—A good method of covering or poulticing the elbow when injured.

Treatment. — If in its acute stage, hot or cold applications may be used; if very much swollen, bathing with hot water will be best. When the acute stage passes off, apply an iodine or biniodide of mercury blister; if serum is secreted, it is recommended as the simplest treatment, to draw it off with a canula and trochar, and inject the sac with compound tincture of iodine, diluted with twice the quantity of water. Or, open the sac freely at the lower part, and

heal like a common wound. If a hard mass is left beneath the skin, it is to be dissected out, and the skin brought together with a couple of stitches, and treat as a simple wound.

Sallenders

Is a name given to an eruption on the front of the hock joint, consisting in a scurfiness of the skin, accompanied by an ichorous discharge and falling out of the hair.

Causes.—High feeding without exercise, disorder of the digestive system, uncleanliness, and bad grooming. In stallions of the heavy draught breed they are a very common affection, and prove difficult to remove.

Treatment.—Dress the parts with mercurial or iodine ointments, keep the legs dry and clean, and give regular but not severe exercise, and occasionally a dose of laxative medicine. When only slight, the following lotion may remove them:—

20 grains corrosive sublimate,
1 pint water.

Apply twice a day.

Mallenders

Is the name given to a similar affection located at the back of the knee. The treatment must be the same as for sallenders.

Saddle and Collar Galls,

A very common occurrence among horses, are caused by uneven pressure of the saddle or collar; the skin becomes excoriated, and the hair falls off. Large inflammatory swellings appear, which may form into abscesses, or the skin may become indurated and thickened.

Treatment.—The parts should be fomented with warm water, and some simple or cooling lotion applied, as,—

1 ounce acetate of lead,
1 pint water.

If abscesses form, they must be freely opened, and well fomented or poulticed. When the skin becomes indurated, forming what are called sitfasts, they must be dissected out.

The following is said to be an excellent healing lotion for saddle or collar galls:—

1½ ounces sulphate copper,
1 ounce sulphate zinc,
1½ ounces sugar of lead.

Put in three pints of water. Swab on the parts two or three times a day. Reduces inflammation, and sets up healing granulation of parts.

Tenotomy.

As the name indicates, it consists in division of the tendons in cases of morbid contraction, giving rise to knuckling over the fetlock, causing the whole weight to be thrown on the toe. It is only applicable to cases in which we have no anchylosis of the joints.

The horse being cast and properly secured, the leg is taken out of the hobbles, and a rope attached to the foot, which is held by assistants. A longitudinal incision is made about an inch in length, a little in front of the tendons, and below any point of thickening that may exist. A common, small bladed scalpel, or the curved tenotomy knife, is passed in, care being taken to avoid the artery vein and nerve, and the tendons are divided; the skin behind must not be cut, as the ends of the tendon may protrude, giving rise to fungus growths. The foot should now be easily brought into its natural position; if not, some force should be used to bring it back "by placing the knee against the front or projecting part of it, at the same time laying hold of the foot with one hand, and the upper part of the leg with the other, and using considerable force." This is sometimes necessary to break up adhesions which may have formed. A stitch or two should be put in the wound, and a thick woolen bandage kept constantly wet with cold water should be applied for some days. If much inflammation ensues, a poultice should be applied, and some purgative medicine given.

If the fetlock descends too much, the heels should be raised. If adhesions take place during recovery, a tipped shoe should be put on the foot. In from two to three months he will be fit for work.

In a conversation with Dr. Hamill about this operation, in explaining the simplicity and success of the operation, he referred to a case in point. To make the matter more clear to the general reader, I made the request that he would write out a statement of

the method of treatment used by him, with a drawing showing the position of the foot before being operated upon; also drawings of his method of adjustment for holding the foot in position after the operation, which are here given:—

"TENOTOMY, OR DIVISION OF THE TENDONS.

"This is one of the simplest, as well as one of the most useful operations in equine surgery, as it will restore to normal position and strength a limb which has been so much deformed by contraction of the great flexor tendon of the foot, as to leave an otherwise good horse utterly useless. This contraction causes what is known as knuckling, or descending forward and downward of the fetlock joint towards the ground.

"The operation is as follows: The horse is secured (in some cases throwing down is unnecessary), the leg is flexed or bent at the knee, a very small incision is made through the skin on the inside of the leg, at the inner border of the tendon, where it stands out freest from the 'cannon bone.' (See Fig. 876.) Then insert a probe pointed tenotomy knife, keeping it pressed as close to the tendon as possible to avoid cutting the artery, which may be better protected by pressing with the fingers of the left hand towards the bone, all the soft tissues lying in front of the tendon. Press the knife in until the skin is reached, but not cut on the opposite side; turn the edge towards the tendon, cut carefully backward, while an attendant straightens the limb, until both tendons are severed, if necessary, to let the limb out straight. But a small wound is best for the healing process. And where adhesions have taken place, force is required to straighten out the foot, with the *brace* or *stay shoe*. (See Fig. 878.) With a little antiseptic dressing occasionally to the wound, recovery will take place early. As a much better 'set' limb can be had with use of *stay shoe*, it may be added that one can be easily made by welding a bar of the desired length on the old

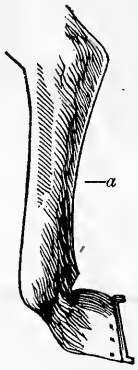


FIG. 876.—Showing the position of the foot before being operated upon.

a, Point to enter the knife for cutting the tendons.

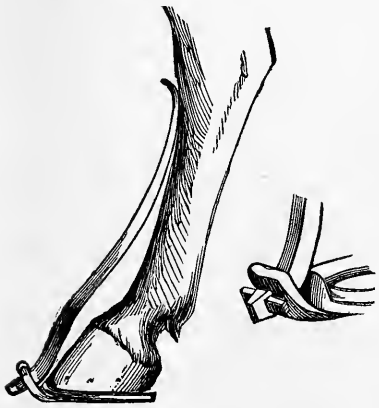


FIG. 877.—Drawing of the shoe and bar used for the treatment of the case referred to.

shoe, setting it to the position of the sound limb, then packing and bandaging all together just above the point of operation. (See illustrations below.)

"The *adjustable brace shoe*, shown in Fig. 877, is also simple, which is taken from the very shoe actually in use on one of the worst cases of contraction of the flexor tendon ever in New York City. A horse belonging to Messrs. Smith & McWilliam, Manhattan Gas Works, N. Y., was a large, powerful draught horse, between fourteen and fifteen hundred weight, used at very heavy work. Through some sprain to the off hind limb, he kept walking on the toe for about five or six months. Every known remedy was tried to prevent knuckling, both as regards medical treatment and shoeing. Heavy plates of steel were welded in front of the toe of the shoe. During another six months, he kept going over, until finally he walked on the anterior face of the hoof, with the fetlock joint resting on the ground. Fig. 876 shows the position in which the foot was carried. The limb appeared to be paralyzed above the joint. When he was down, he was quite helpless, had to be helped up, and in the end could hardly be made to stand alone. The owners decided to have him destroyed, although only eight years old, but first acquainted their veterinary surgeon. He advised tenotomy, which was performed in the month of March, 1878. In a few weeks the horse worked on Mr. Smith's farm at heavy ploughing, and other farm work. Shortly after, he was taken back to the city, put to the same heavy work again, when he worked for two years, and never afterward showed the slightest lameness, or even weakness in that leg."

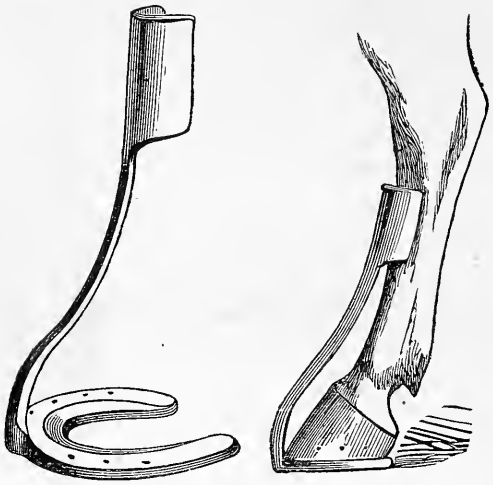


FIG. 878.—Drawing of model shoe and bar designed for this purpose, and its adjustment.

In 1865, I purchased a pair of finely matched stallions. After being trained carefully, the first time exhibited they were driven to a new wagon. In turning short around, the wheel caught into the rub-iron, and being on sideling ground, it caused the wagon to upset, when the horses got away and ran into their stable close by. Upon examination, it was found that the sharp corner of

the tire on the fore wheel, in striking one of the horse's hind legs, entirely severed the tendons about three and a half to four inches above the point of the fetlock, allowing the foot to turn up, and the ankle to rest upon the ground. I supposed, of course, the horse was ruined, and beyond help. At that time I knew nothing at all about the treatment of sickness or lameness, and there being no veterinary surgeon in all that region of country, was consequently thrown upon my own resources. The horse being a valuable one, and the injury to him breaking up a fine team, I was bound to save him if I could, and succeeded in doing so as follows:—

I had the horse put in slings; next had the shoe taken off the foot, to which I had a piece of strong iron welded on at the toe. I then took a piece of leather, drew it around the fetlock, and fastened through a loop in the iron, as shown in Fig. 879. The part was simply dressed as an ordinary wound. Excessive inflammation was kept down by showering with cold water. In about five weeks the parts seemed to be entirely healed, leaving considerable enlargement; but fearing that by giving him entire freedom, the tendons might be torn apart, I kept him in slings a little over seven weeks.

FIG. 879.—The foot as it was supported.

I kept a man with this horse night and day, with instructions to let him stand upon his feet easily an hour or so at a time, then alternating by shortening the slings, so as to rest his weight principally upon them. It was also so arranged, by an extra strap behind, as to pull forward and upward like a breeching. Every precaution was taken to nurse, by giving nourishing and easily digested food. Indeed, without this precaution, I think he could not have been saved, as the weather was very warm, and very trying for a horse to stand so long in a warm stable. As it was, he was very much emaciated when taken out of the slings, though he soon regained his strength and flesh, and seemed to be as well as ever. The enlargement gradually subsided, so that at the end of a year it was scarcely noticeable. There was at first a little want of mobility in the limb, but it soon disappeared.

I would here add that it would have facilitated the absorption

of the enlargement, to have used a slight absorbant, with moderate pressure of a light woolen bandage.

Castration.

The following article was, by special request, written by Dr. Chas. A. Meyer, who is an expert in the performance of this operation:—

"Castration by the Latest Method.

"Advances and progress have been made in all branches of the sciences and arts, and the art and science of surgery has been one of them. The nature, temperament, and disposition of the horse is better understood, and the educated veterinarian often risks his life for the benefit of stock raisers. We will, therefore, speak of

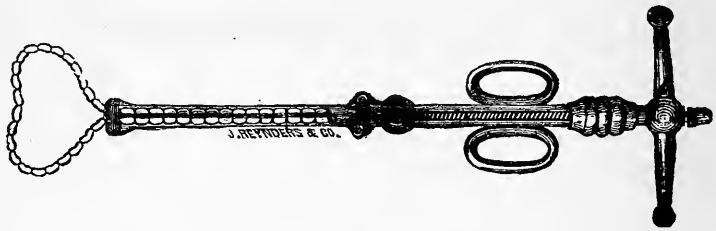


Fig. 880.—Miles' Ecraseure.

the most improved method of castrating the stallion, as it is now, and will in the future be performed, with more ease and success. The old method of castrating the stallion, which so often injures the animal by breaking his back, injuring his limbs, spraining his muscles, and frequently disabling him for life, is now prevented. The method as now performed is to castrate the animal standing, using no ropes to tie his legs, no hard usage, no clamps, and less liable to cause tetanus, eryseplas, sclerous cord, etc. The operation is as follows:—

"Put a halter on the animal, speak to him kindly, lead him to a corner, and quietly back him into it. Have the groom hold the halter-rope with the right hand, rather short, and place his left hand or arm over the face of the horse, and turn the animal's head to the left, or nigh side. The operator should have a sharp castrating knife, a pair of scissors, and, the most important instrument of all, the ecraseure (as shown in Fig. 880), called Miles' Ecraseure. The operator should stand on the nigh side, midway between the fore and hind legs (say nothing to the horse), grasp the scrotum gently in the left hand above the testicles, now with the knife held about 8 to 10 inches from the scrotum, make a slash into, and throng the coverings of the testicles, cutting into them proper. While the cut is made with the fore fingers at the back of the scro-

tum, raise the severed coverings, and the testicles pop out. This must be done quickly. Then step back, apply the chain of the ecraseure about an inch above the testicle, and quickly tighten the chain. When a firm tortion is on the chain, gradually tighten the same, when a peculiar grating sensation will be felt. Do not cut clear through the cord with the chain. Then take your scissors and cut below the chain, when the testicle will fall to the ground. Gradually loosen the chain, which should require about half a minute, and repeat the same operation on the second testicle. You will not have any bleeding, and the animal will stand perfectly quiet.

"This was at one time performed by a few men, who traveled through the country castrating, and who captivated the stock raisers by their clever way of operating, and who look upon it as a secret, of which there is no such thing. The whole secret lies in this: The testicles are endowed with a profuse plexus of nerves, and is a highly sensitive organ. By making a sharp, quick incision in the testicle, the pain is so intense that the animal becomes unnerved, and is under complete control of the operator. In this lies the whole secret. In some cases, the stallion makes a few sharp, quick kicks with one leg, but they are so as not to get in close proximity with the operator, being straight out behind. There is no danger to either the operator or the horse. Nothing is applied to the wounded part, which is to be left alone, and a slight swelling will be visible for a few days, which is natural, and must be to produce a healing of the parts. The percentage of loss is very slight, and only then due to complications, such as colds, etc. I have never yet seen an animal die from being operated upon by this method."

The Old Method,

As practiced by an old man named Gould, who is a resident near Bath, Steuben Co., N. Y. He is known in that and surrounding counties for his success in castrating horses, claiming to have never lost a case, and but little swelling after the operation. The writer took particular pains to see the old man operate, and learn his secret.

The horse was laid down and tied in the usual manner. He washed the parts thoroughly with warm water, and then greased with lard. The clamps were of the usual kind. It is the preparation he put on the clamps that made his success, he said.

He put on the clamp, first rye flour paste; on this, sifts on equal portions of red precipitate and corrosive sublimate, mixed together in powder. In 24 hours the clamps were taken off. This method of treatment has been pursued for many years by a

friend of the author, and he claims, with unfailing success, never having lost a case, and is followed by no appreciable swelling.

Injuries and Diseases of the Penis.

Causes.—The penis or yard of the stallion more particularly is liable to injury, from being kicked in covering, or sometimes it gets injured by awkwardness of the groom in serving mares; also from being cruelly struck with a whip or stick while in a state of erection. Warts and excrescences frequently cover the surface of the organ.

Symptoms.—We may have injuries of more or less severity from a slight scratch to deep and severe laceration of its substance; or, on the other hand, the blow may have merely bruised, without breaking the skin, producing want of power to retract it, and often accompanied by enormous swelling of the organ. When long out, the glans assumes a reddish-brown colour, and the surface is cold, with very little sensibility. This is known as *paraphymosis*. Sometimes these swellings subside, but thickening and enlargement of the lower part remains, preventing retraction within the sheath, proving very troublesome and unsightly. Warty excrescences are easily recognized, and may occur on any part of the organ.

Treatment.—Injuries from kicks and blows must be treated on the general principles of subduing inflammation. If it hangs pendulous, it must be supported by a broad bandage round the body, and copious affusion with cold water, or iced water in summer, constantly applied; if very hot and tender, accompanied by fever and constitutional disturbance, hot fomentations may be more applicable; whichever is employed must be persevered in for some length of time. Purgatives should be given, and low diet, for some time.

Unless there is extensive laceration of the substance of the organ, nothing more than cold applications are required, should it prove tardy in healing, goulard lotion, or a mild solution of sulphate of zinc will prove beneficial. When it continues, and the tumefaction increases, free and deep longitudinal scarification must be made on its surface, and repeated in a few days, if necessary. Sometimes charcoal poultices are required to cleanse the wounds and soothe the part.

Foulness of the Sheath and Yard.

In geldings the penis becomes diminished considerably in size, and, from want of the sexual desire, seldom protrude it without its covering, the sheath, consequently the sebaceous secretion of the glands in the prepuce accumulate, forming a black soft fœtid substance, with a strong persistent uric odour. This sometimes becomes irritating, and gives rise to uneasiness, and should be occasionally washed out with warm water, and a soft sponge, taking care not to scratch or bruise the inner surface, as troublesome swellings sometimes ensue.

More trouble, however, arises from the accumulation of little round "beans," (as horsemen call them,) of a soft clayish appearance, in the cavity in the head of the penis, surrounding the end of the urethra; sometimes obstructing the passage of the urine, by pressing on the urethra, or even stopping up the orifice itself, giving rise to difficulty in staling, and uneasiness.

The sheath should be washed out with soap and water, and the hand, well oiled, should be passed up, and the penis drawn out, when the accumulation should be removed, taking care not to scratch or bruise the parts.

Parturition or Foaling.

The period of gestation in the mare varies from eleven to thirteen months. Usually about ten days before foaling she begins to "make bag," the udder enlarges, and a thin milky fluid can be drawn from the teats, and a glairy discharge escapes from the vagina, giving warning that the foal is about to be dropped. When the time approaches, she becomes uneasy, getting up and down frequently. Presently the true labour pains begin, the womb contracts on its contents, assisted by the diaphragm and abdominal muscles; the whole body is convulsed with the effort; the mouth of the womb becomes dilated; the water-bag appears and bursts; and when the presentation is natural, a few efforts force it out—sometimes enclosed in the membranes, which must be immediately removed; and if the cord does not give way itself, it being sometimes thick and strong, a ligature should be put on it about four inches from the belly, and the remainder cut away. In general, mares are best left to themselves at this important

period, but care should be taken that they do not get into awkward positions, as against a wall, or the sides of the box.

Abnormal Presentations.

The natural position of the foal at birth is with the head resting on the two fore-legs. When in this position, and the parts natural, it soon comes away without very much exertion. In many cases, however, the foal is found in such positions as to prevent its escape without assistance. In all cases of protracted labour, where the pains continue without effect, assistance may be required. The hand being raised in temperature by washing in warm water, should be introduced to ascertain the cause. In some cases the neck of the womb will be found not sufficiently dilated, but the foal is found in its natural position. In such cases, it may be gently dilated with the hand, or left alone, when nature will often overcome it herself. In cases of natural presentation, we must not be in too much hurry to deliver; harm is often done by injudicious interference. One or both fore-legs may be doubled back, with the head presenting. In this case, push it back, and pass the hand down the leg if possible; get them up into the passage, either by the hand or looped cords passed round the fetlock, when, by slight traction, it will generally be brought away. The legs may be presented in the passage, and the head either doubled down under the brim of the pelvis, or turned over the shoulder down on the flank. In this case, it should be pushed bodily back, and the head sought for, when a loop must be placed, if possible, on the lower jaw; it must now be pushed back, while the head is to be pulled forward, and brought into the passage. This case is often very troublesome, from the difficulty sometimes experienced in reaching the head. It is sometimes necessary to remove one of the legs by cutting the skin round the fetlock, and with the embryotomy knife dividing the skin of the leg as far as the shoulder, and separating it with the fingers, when it can be removed. A cord should be attached to the loose skin to aid in traction, when the head can in most cases be reached. We have had occasion to remove both legs in the same manner before delivery could be effected.

Sometimes the buttocks and tail are only to be felt; this is often a troublesome case, especially when the legs dip under the

pelvis. It must be pushed well in, and the hind feet, if possible, secured and brought into the passage. Often, however, it is very difficult to do, when, as recommended by Prof. Dick, "the contents of the abdomen must be removed at the rectum; the pelvis divided at the symphysis, when a cord being attached, and force used, the hind legs will get into the place of the viscera, and the quarters collapse so as to allow of extraction." The whole four feet may be presented in the passage; the simplest way of delivering in this case is to feel for the hocks, and slip loops on the hind feet; and by pushing back the fore ones, it may be removed by the hind legs.

It is impossible to describe minutely the details of procedure in these cases, as, from difference in collateral circumstances, such as size, age, length of time she has been in labour, swelling of the parts, etc., etc., different plans of treatment must suggest themselves to the operator. The principles to be observed are these: endeavor to get it into its natural position, in which position it is easiest delivered; failing in that, to get it into the next easiest, viz., the hind legs first—that impracticable, to remove those parts of the foal which offer most resistance, care being taken in so doing not to bruise or lacerate the mare. In no circumstances are tact, coolness, and steady perseverance more required than in a protracted case of labour; however, the dictates of humanity no less than professional duty demand that we shrink not from the most difficult.

Blisters.

Before a blister is applied, the hair must be cut off from the part as closely as possible. The blistering ointment is then to be well rubbed into the part with the hand; and after this has been continued about ten minutes, some of the ointment may be smeared on the part. In blistering the legs, the tender part of the heel, under the fetlock joint, is to be avoided; it may be better to rub a little hog's lard or vaseline on it, in order to defend it from any of the blisters that may accidentally run down from the leg. When the legs are blistered, all the litter should be removed from the stall, and the horse's head should be carefully secured, to prevent his rubbing the blistered parts with his nose. On the third day he may have a cradle put around his neck, and be

turned loose into a large box, or a paddock, or an orchard. In a field he would be apt to take too much exercise. About a week or ten days after the blister has been applied, the parts should be oiled with some olive-oil or vaseline. If flies are troublesome, and make the horse restless, they may be kept off by the tar ointment, or tar and train oil mixed.

Counter Irritants.—Their Uses, How to Employ Them, etc., from Williams.

"In all painful affections, warm fomentations or poultices must as a rule be prescribed. In the course of some days, however, if the pain is subsiding, and the parts seemingly relaxed, much benefit will be obtained by making a change to cold, mild astringents and bandages, to promote absorption of the exudate.

"The congested capillaries may be relieved by local bleeding, but the parts upon which such an operation is performed are very few, except about the coronet or the foot. An incision into the coronary plexus will reach the vessels at once; the utility of this is, however, very doubtful, except in rare cases. Bleeding at the toe, although much practiced by many, is not to be commended.

"Purgatives are very useful during the first stages of lameness, reducing the inflammation. A full dose of aloes may be given with advantage, the diet being properly regulated and restricted to bran mashes, a little hay, and the water to be chilled.

"After the acute signs of inflammation have subsided, if the lameness still remains, the application of the so-called counter irritants will be rendered necessary. These consist of rubefacients, blisters, setons, and the actual cautery. The actions of these remedies differ only in degree, in rapidity, and in performance, not in the nature of the exudation which they produce. Without entering into any speculative discussion upon the question, superficial irritants are beneficial in all cases of chronic lameness, whether it be caused by disease in bone, cartilage, ligament, tendon, or any other structure; and they are often more decidedly beneficial when applied to the diseased structure itself than to the skin covering it. For example, a lameness arises from bone spavin; its eradication is much more certain and rapid when a pointed cautery is applied to the diseased bones than when the hock is fired in the ordinary way. Again, a spavin has been fired and blistered repeatedly without benefit; the bones are "punched" (a barbarous operation, and only to be performed in extreme cases), violent inflammation is excited in the diseased bones, which for a time increases the lameness; but this gradually subsides, and the original lameness is found to be removed.

"I am of the opinion that the curative action of external irritants is not due to their producing metastasis or counter irritation; but that they excite within the originally diseased structure a re-

parative inflammation, partaking in its nature of what is described by Virchow as the "secretory inflammation," which, superseding the original diseased process (whether that be inflammation pure and simple or its effects, ulceration, caries, or a formation of a low form of fibrous tissues), excites the formation of reparative material by which the breaches are united, ulcers healed, and diseased action removed.

"To illustrate this view, I will bring forward two familiar examples: 1. The healing of a sinus or fistula, after the application of a blister, or of the actual cautery to the skin contingent to it; and 2. The removal of phlebitis (inflammation of the vein in the neck after bleeding) by a blister.

"In the first instance, we find that a sinus heals after a blister or cautery, by the formation of an organizable exudate, which completely fills up the cavity of the sinus; and, in the second, we find that a blister assists in the obliteration of the inflamed vein, not by removing the inflammation from it, but by promoting the formation of a large quantity of reparative lymph, and hastening its further development into fibrous tissues, by which the vessel is transformed at the inflamed part into a fibrous cord. Now if the curative action were due to the removal of inflammation, we should find that in the first case the relief would be only of a temporary nature, the sinus would still remain, being generally the cause, and not the effect of the morbid action; and in the second, that the inflammation being removed from the coats of the veins, the vessel would, upon removal of the clot, become pervious. But such is not the case. Let the clot be removed ever so often, it is sure to form again, and nothing has the power of overcoming the inflammation of the vessel until it has been transformed into an organized cord, a process most materially hastened by the application of a blister.

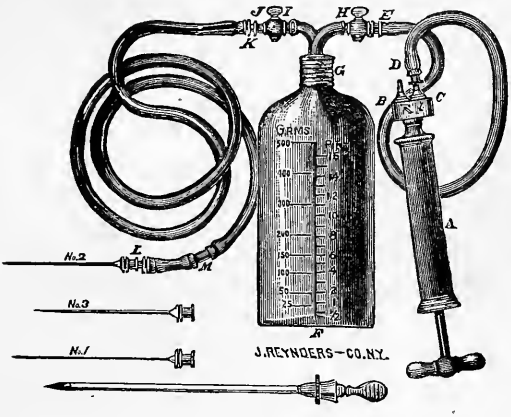


FIG. 881.—The Aspirator.*

"I think it may therefore be accepted that external irritants —whether they be simply rubefacients, producing a mere redness

* This cut belongs in article on windgalls, page 778; but on account of not being available when the matter for that article was put in type, it is inserted here. It was furnished by John Reynders & Co., Manufacturers of Surgical and Veterinary Instruments, etc., 393 Fourth Avenue, N. Y.

of the skin, vesicants or blisters, which cause elevations of the cuticle by fluid underneath it, or cauterization and setons, which promote the suppurative action—remove lameness by assisting nature in a process of repair.

"*Rubefacients* may be employed in the less severe forms of lameness, in sprains of tendons, or in slight affection of joints, along with rest and fomentations, after the more acute symptoms have passed away.

"It is usual to apply blisters in all cases of some standing, when organic changes in the parts involved are suspected. Before a blister is applied, the hair should be clipped from the part, which, if dirty, ought to be washed, and when dry, the blister to be applied with smart friction for about ten minutes. To obtain the full effect of a blister, a quantity of ointment is to be thickly laid on after the rubbing in is completed.

"The best agent is cantharides, in the form of acetate, tincture, or ointment, to the limbs, the ointment in preference; one part of cantharides to twelve parts of lard or palm-oil. If prepared with a temperature equal to the boiling point of water (212°), it will be sufficiently *strong* and will *never blemish*. It is a mistake to think that the powdered flies should be mixed with the vehicle when it is nearly cold. An ointment so prepared will require three times the quantity of cantharides. The heat melts the cantharidine.

"*Hints upon blistering generally.*—No more than two legs are to be blistered at one time, and three weeks at least must be allowed to elapse before the others are blistered, and between each re-application. It is bad practice to blister extensively in very hot weather; and it is a mistake to suppose that blisters to the loins and back are more apt to irritate the urinary organs than when applied to any other part of the body, provided that it be carefully and properly done.

"The evil results of blistering are: 1st. The production of strangury, by the absorbed cantharidine irritating the urinary passes. This is a very rare occurrence, provided the blister has been applied to a moderate extent of surface; but if four legs, or even two, be extensively blistered at one time, the occurrence of such may be laid down to the indiscretion of the practitioner. In some cases, however, very moderate blistering may be followed by strangury, and when it does occur, it is best treated thus: First wash the blistered surface with warm water, in which a little alkali has been dissolved; dress it with oil, give the animal demulcents to drink, such as cold linseed tea, and administer a few doses of opium and bicarbonate of soda.

"2d. The production of a considerable amount of nervous irritability, fidgetiness, quickened pulse, and injected mucous membranes, with loss of appetite. These symptoms are due to a nervous temperament; and if not very severe, had better not be interfered with. Should they become alarming, the animal must be treated as in the first instance; the fomentations being continued

for a longer period to the legs. It may be here mentioned that fomentations should not be hot, but soothingly warm.

"Sometimes blisters, no matter how carefully applied, produce excessive swellings of the limb or limbs, with a tendency to suppuration and sloughing of the skin. These results are generally due to the animal's being in bad health, and in a condition tending to anasarca or to erysipelatous disease. The treatment must consist of purgatives or diuretics, as the case may be; fomentations, astringent lotions, and gentle exercise, as soon as the pain is sufficiently subsided to admit of the animal's being moved about. In many cases the swellings involve the sheath of the penis, and the under surface of the abdomen. Punctures are very useful in such parts, by allowing the escape of the contained fluid. I have seen tetanus arise from a very limited blister to one fore leg.

"If the effects are not sufficiently apparent in about thirty hours after the blister has been applied, a very little more, or what is remaining on the skin, which may be sufficient, should be gently rubbed in; and in about forty-eight hours after the application the part is to be washed, and every trace of the blister removed; a little oil being now applied, or, what suits perhaps better, an emulsion of sweet-oil, carbonate of potash, and water. It is a mistake to keep the parts soft too long; the eschars should be allowed to accumulate, and to desquamate gradually.

"*Firing*, or the application of the actual cautery, is a much more severe irritant than a blister, and often removes pain very rapidly when repeated blisters have failed to do so. In bone diseases, and in all cases of chronic lameness, it is of great benefit, and seems to act by powerfully exciting the healing process in the part diseased. The firing may be in lines, and superficial, the transverse method being the least calculated to blemish; or it may be in points, and deep, by pyro-puncture (see treatment for spavins, ring-bones, etc.) into the diseased structure. This latter method is the more easily performed, and the more effective.

"Nothing is more calculated to dispel the idea of the correctness of the counter-irritation theory than the dissection of a part which has been recently fired (say three days after the operation), when it will be found that the skin, subcutaneous tissue, and the bones,—when they are superficially situated, such as those of the hock, pastern, etc.,—are involved in the inflammatory action so produced. Thus a bone spavin lameness is removed by the inflammation excited by the cautery in the diseased bones, providing a supply of material for the purpose of uniting them together into one immovable mass; or as in caries of a ginglymoid joint, for the repair of destroyed structure, as already explained.

"*Setons* act very satisfactorily in some cases of bone diseases, especially in those accompanied by external heat of the part; they produce a discharge of pus, and their action can be continued for a much longer time than that of blistering or firing. In tendenous or ligamentous lamenesses, with much thickening of the integuments and subcutaneous structures, setons should not be employed,

as they leave much additional thickening, and are not so effectual as the actual cautery."

Hot Fomentations.

This is so often advised for acute inflammation, sprains, etc., notwithstanding the simplicity of its application, I think it advisable to give such details as will serve to aid the owner in its use. The use of hot and cold water alone, intelligently applied, will be found a very safe, simple, and effective remedy for allaying inflammation, pain, and congestion.

The principle is to apply all the heat the animal will bear, but not enough to scald or burn. It is best accomplished by wringing through a common clothes wringer a woolen blanket (a common horse-blanket will do) out of boiling hot water, fold it quickly into four or more thicknesses, and place it over the affected part. Cover the hot cloth well with dry blanket. If continued or repeated long enough to relax the skin, cold is to be applied to tone it up, when, if necessary, the heat is to be again continued.

For Acute Pleurisy.—To relieve the pain, apply hot fomentations over the seat of the pain, from one to three hours, or till the pain subsides. The fomentations should be renewed every five or ten minutes, and at the conclusion should be followed with a heavy, cold compress for about ten minutes. Ice compresses instead of the fomentations will sometimes afford relief when all other means fail. After ice-compresses have been applied for an hour, they should be followed by a hot fomentation, and then apply the cold compress again until the pain subsides.

For Colic.—Apply hot fomentations sufficiently large to cover the abdomen or belly of the horse, in quick succession, for an hour or so, till relief is obtained. And at the same time give a copious injection of hot water into the rectum, of from 110 to 118° F. A gallon or two of water should be used for this purpose. Any kind of a syringe will do, but the Fountain Syringe is much to be preferred above all others. Sometimes the fomentation is all that is necessary to give relief, and sometimes injections alone will give great relief.

For Strains and Sprains.—Apply hot fomentations vigorously, changing them every five or ten minutes till the pain and swelling subside. Apply a cold compress for the last application,

and the compress can be left on continuously, but it should be covered with the woolen cloth.

For a Cold.—If the cold is located in the head, a fomentation can be applied to the head, and should be extensive enough to cover most of the neck. This can be done by folding a blanket lengthwise about four thicknesses, and just winding it spirally around the horse's head so as not to cover the eyes; and if one blanket is not sufficient, another blanket can be wound around the head and down the neck in the same manner. The fomentation should be well covered with a dry blanket, and if it is so hot that the horse cannot bear it, the hot folded blanket, after being wrung out of hot water, should be folded in a dry one, so as not to burn him. In this case, it is not necessary to add another dry blanket over the fomentation.

If the cold seems to be settled all over the horse, several blankets may be joined at the edges, and thrown over the horse so that the edges hang down to the ground, forming a kind of tent for the horse to be under. The edges of the blanket behind and before the body can be pinned together. Then place a vessel with hot water under the horse, and a hot brick or hot flat-irons can be thrown into the water to produce a vapor, which should be continued until the horse is in a profuse sweat. Then he can be sponged off, beginning with cool water, and ending with cold water, or sprayed with cool water, then with cold; or the water can be poured over the body, if it is not convenient to spray. The animal should then be warmly blanketed, and in the course of 20 minutes if he does not sweat, or has ceased to sweat, should then be dried thoroughly by wiping with cloths and rubbing with the hand, until perfectly dry. Care should be taken that the temperature of the room in which this treatment is given should not fall much below 50°, and would be better to be about 65° or 70°, and there should be no draught. The treatment can be made much more effective by placing the horse's feet into as hot water as he will bear, while the vapor is being given.

Another method is a hot-blanket pack, which is sometimes more convenient, and is just as effectual. The hot-blanket pack can be given by wringing a heavy blanket out of hot water, and folding it; then folding it into a dry blanket and putting it around the body of the horse. It will require at least two such

blankets to reach over the body of the horse. He should then be very heavily blanketed, so as to keep the heat of the hot cloths in, and produce perspiration. The hot-blanket pack should be followed by cool sponging, spraying, or pouring, the same as after the vapor bath. The after treatment should be the same as after the vapor bath.

Poultices.

The simplest and cheapest poultice can be made by pouring boiling water on about a peck of bran, so as to make a very thin mash; or linseed meal could be added to it. Boiled turnips make a good poultice, which would also be improved by the addition of a little linseed meal.

Poultices are generally too small, confined, and dry. A poultice should be made large, so as to cover the parts thoroughly, and keep them moist. When a horse gets a nail in the foot, or it is calked, or when there is any local inflammation from an injury, covering the parts with a warm poultice will be found a very simple and good way of keeping down inflammation. If it is desired to poultice the leg for a sprain of the tendons, a flannel bag can be made for the purpose, or an old pant's leg, if convenient, can be pulled up over the leg; tie a string loosely around the foot below the fetlock, and fill the bag with the poultice above the knee, which can be kept up by tying a piece of listing, or a strip of flannel over the shoulder. Poultices are also useful applications for promoting suppuration in inflamed tumors; and when there is irritation or inflammation in the heels, such as scratches, cracks, or grease. The poultices commonly employed for these purposes are of an emollient character. The following is a standard formula:—

1 pound linseed meal,
2 quarts bran,
2 to 4 ounces hog's lard.
Boiling water enough to make a soft poultice.

Or, turnips thoroughly boiled and mashed, any quantity, linseed meal enough to form the poultice. A good poultice can be made of carrots, grated finely. Either of these simple poultices may be converted into an anodyne poultice by the addition of opium; into a fermenting poultice by the addition of yeast, and by substituting oatmeal for linseed meal; into an astringent poul-

tice by the addition of Goulard's extract, sugar of lead, or powdered alum; and into a detergent poultice by the addition of white or blue vitriol.

In obstinate cases of virulent grease, where there is much pain, and a stinking, dark colored discharge, and especially when emollients are found ineffectual, the detergent poultice has quickly cured the disease, and in such cases even a solution of corrosive sublimate has been used with the best effect. But emollients should always be fairly tried, and some diuretic medicine given.

The Pulse.

The arteries are the vessels which convey the blood from the heart to the system. "The blood nowhere passes through an artery so rapidly as it is forced into it by the ventricles of the heart, on account of the resistance offered by all the tubes against which it is forced. The consequence is, that when it receives the wave of blood, both the diameter and the length of the vessel is increased, and this is followed by a recoil and recovery of its previous position, owing to the elasticity of the tube; these operations constitute the pulse, which is felt when the finger slightly compresses an artery."—*Bennett.* Hence the pulsations of the artery correspond with the beatings of the heart, and consequently indicate the irritability of that organ, or the system generally. The average pulse of the horse is from thirty-two to forty-two beats per minute. The smaller and more nervous the horse, the quicker the pulse; while the larger and coarser bred, the slower. The most convenient places to feel the pulse are at the arm, on the inside where the artery *(radial)* passes over the head of the bone, or on the under part of the lower jaw. It can be felt easiest and best at the lower jaw, a little behind, where the submaxillary artery comes up and winds round to gain the cheek. (See No. 13, in Fig. 882.) Pass the finger down the jaw up near the neck on the inner edge, and a cord-like ridge will be felt, which, upon gently and firmly pressing it with the end of the finger, will plainly be felt to throb and beat. (See Fig. 883.)

"Frequent reference is made to the state of the pulse in different diseases, such as colic, pneumonia, laminitis, etc., etc. Hence it should be studied carefully. For example, during the early stage of colic, the pulse will be hardly affected, and the ears and

legs will be natural in temperature; while in inflammation of the bowels the pulse will be quick and wiry, ears and legs cold, etc. In fever it is quick, wiry, and light, indicating the extreme or not of disturbance in the circulation."—*Youatt.*

There are four general principles, or points, which must influence the course of treatment in all diseases. If there is high

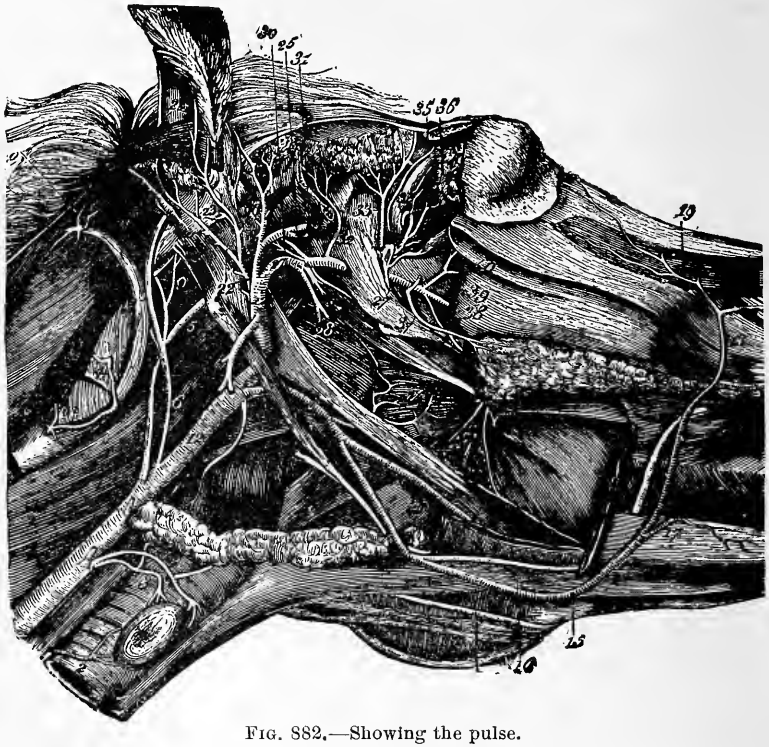


FIG. 882.—Showing the pulse.

1 and 12, Carotid artery and its branches; 13, Submaxillary artery.

temperature, 102 to 107 (107 to 108 is fatal), the first point is to reduce the fever. In first stage, aconite internally is best; externally, wrapping the body and extremities to equalize the temperature.

The heart's action is the next great point. 34 to 40 beats to a minute is normal; below that indicates debility. If it is a quick, wiry, or thready pulse, it indicates inflammation of the intestines

or abdominal organs, which calls immediately for sedatives. Take, for example, general colic treatment. Usual colic dose:—

1 to 2 ozs. laudanum,
1 to 2 ozs. sweet spirits nitre,
1 to 2 drachms tincture belladonna,
¾ to a pint of linseed oil.

If tympanitis (flatulent colic), would add to the above one-half to one ounce tincture jamaica ginger, and one-half to one ounce aromatic spirits of ammonia, with a few drops tincture nux vomica, every one-half hour, until relieved.

Fig. 883.—Feeling the pulse.

Quick and feeble pulse indicates the lungs being involved. Moderately rapid, and throbbing or bounding pulse would indicate inflammation of the extremities, such as laminitis, and to be treated as such. While an irregular pulse-beat, whether fast or slow, would indicate the heart itself being involved, which is to be treated by giving medicines that act upon the heart, such as alcoholic stimulants, belladonna, and digitallis. The first two stimulate the heart, the last is a heart sedative. Of alcohol, brandy, etc., give 2 to 4 ounces, with same quantity of water, for a dose; tincture of belladonna, 10 to 12 drops, which may be given in small doses every hour for an unlimited time, or in 1 to 2 drachm doses twice a day, not to be longer than a few days. Digitallis being a heart sedative, must be used with greater caution; from 15 to 60 drops of the tincture may be given twice a day for two to four days, or until the heart's action becomes slower. This drug has accumulative properties—that is, it may not seem to act for some time; and then act with such great force as to be fatal. —*Hamill.*

Giving Balls.

Medicine is most commonly given to horses in the form of a ball or bolas, the size of which should not exceed that of a hen's

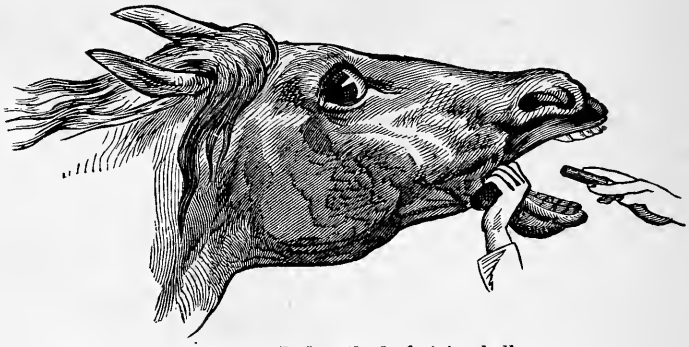


Fig. 884.—Bad method of giving ball.

egg. Though named a *ball*, it is generally rolled up in a cilindrical form, about one inch in diameter, and two and a half in length. In giving a ball, the horse's tongue is drawn out on the off or right side, and held firmly with the left hand, while with the right the

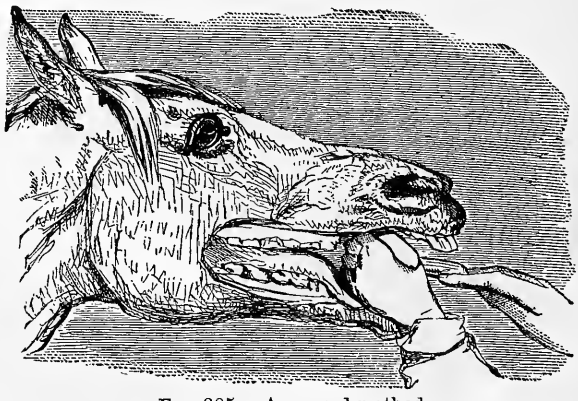


Fig. 885.—Approved method.

ball is quickly passed over the tongue into the pharynx, or top of the gullet. The hand should be kept as near to the roof of the mouth as possible in giving the ball; there will then be much less danger of being wounded by the teeth. The moment the right

hand is withdrawn from the mouth, the tongue is let loose, and the ball generally swallowed.

FIG. 886.—After giving ball.

Balls cannot be conveniently given unless wrapped up in paper; but for this purpose the softest and thinnest should be chosen. In holding the tongue with the left hand, while the ball is introduced, great care is required, as the rough and violent manner in

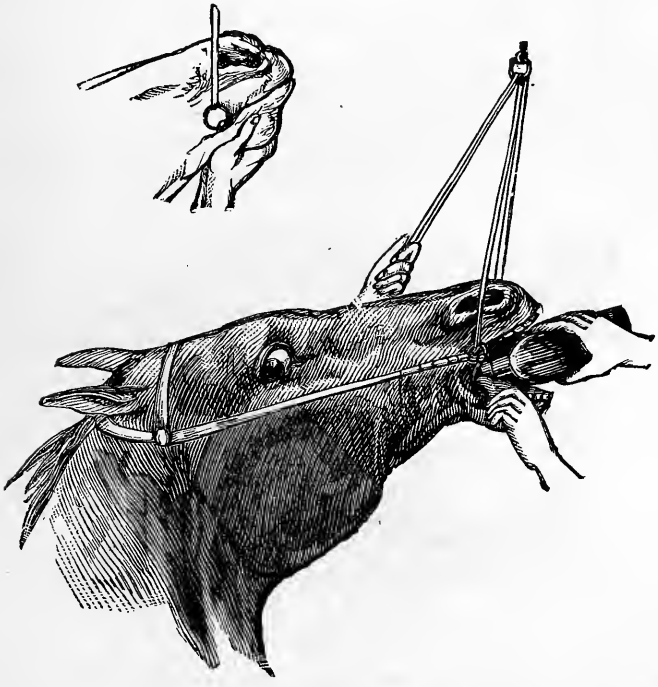


FIG. 887.—Giving a drench.

which this is sometimes done often injures the tongue, or lacerates the under part of it. The muscles by which swallowing is effected

may also be seriously injured in this way. In violent colds, strangles, etc., there is often so much soreness of the throat as to render swallowing very painful and difficult; in such cases, neither *balls* nor *drenches* should be given, as they are sure to do mischief by irritating the throat, and may even suffocate the animal by getting into the windpipe.

Physicking.

It is always best, if possible, to prepare the horse for physic by giving a bran mash twenty-four hours previously, as the medicine will act more favorably, and there is less danger of superpurgation. Five drachms of aloes (Barbadoes aloes are always used for horses) will act as forcibly after a mash as seven without. Again, the quantity of physic should be adapted to age and size. The rule is to give one drachm for each year up to seven. Eight drachms is the largest given at one dose.

PHYSIC BALL.

7 drachms Barbadoes aloes, pulverized,
4 drachms bar soap,
1 drachm ginger.

The usual way is to mix the ingredients in this proportion, then reduce to the weight intended, and give.

For Alternative Balls simply give from one to two or three drachms of mass, as above prepared, two or three times a week, for a week or two. The following are the details advised:—

The horse should be fed with bran mashes for two or three days, and have moderate but regular exercise, or be worked with moderation. He should be allowed only a moderate quantity of hay, especially if he has a voracious appetite; and if inclined to eat his litter, he should be prevented by a muzzle, or by being tied up to the rack in the day-time, or what is still better, by having his litter removed during the day, and by applying the muzzle at night after he has eaten his allowance of hay. If in low condition, some oats may be mixed with the bran mashes; but eight to ten pounds of good hay are a sufficient allowance for a day and night. On the morning when the physic is given, neither hay nor mashes should be allowed, until two or three hours after it has been taken. Some practitioners, however, direct a small, thin mash of bran only, to be given about an hour after, for the pur-

pose of dissolving or mixing with the physic. This, however, is unnecessary, though supposed to render the effect milder and more expeditious. But this is not the case; physic should be given fasting. During the day the horse may have walking exercise for about half an hour, and once only, and be fed with bran mashes, and have the chill taken off his water. Grooms generally consider exercise unnecessary or improper on the day the physic is given; and on the following day, when the medicine generally operates, they are apt to give too much exercise. But as soon as the purging has taken place in a sufficient degree, which is generally the case about the afternoon of the day after it is taken, exercise is unnecessary and improper. And should the purging continue, or be found to be going on the following morning (that is, on the morning of the third day, including that on which the medicine was given), it should be restrained by gruel made of arrow-root or fine wheat flour, with which the horse should be drenched if he refuses to drink it. Should the purging continue after this, about half an ounce of tincture of opium may be given with a little gruel.

Horses sometimes appear sick, and refuse their food, after taking physic, either during the afternoon or evening of the same day, or the following morning. This is generally caused by a neglect of the preparation above directed, by the stomach being loaded at the time the physic is given, or by the horse feeding improperly too soon afterwards; and not unfrequently by the physic being too strong. When this sickness is observed, the horse should have walking exercise; and if it be on the same day the physic is taken, and the uneasiness be considerable, let a clyster be administered; nothing more is necessary. Should it continue, however, the following morning let him be again exercised, and have some water with the chill off; and if the purging does not come on, and he appears to make fruitless efforts to dung, let the clyster be repeated, which, with a repetition of the exercise, will generally produce the desired effect. A horse should be clothed, and not exposed to rain or cold wind during the operation of physic; and when its operation has ceased, he should be gradually brought back to his usual diet and work.

Cathartics improve digestion and chylification by cleansing the intestines and unloading the liver, and if the animal is after-

wards properly fed, will improve his strength and condition in a remarkable degree. Diuretics carry off the excrementitious matter of the blood by the kidneys, and thereby produce a similar effect, but not in so essential or permanent a manner; for if the system of feeding, which renders the blood impure, be continued, it will soon return to its original state. Cathartics are always useful when the appetite and digestion are bad, and this is known by a voracious or depraved appetite, both for food and for water; rumbling of the bowels, and a frequent discharge of wind from the anus. This is the case in a remarkable degree with broken-winded horses, and generally in such as have chronic cough, or are crib-biters. Cathartics should not be given too strong or too frequently, as they may thereby weaken instead of strengthen the digestive organs, and produce the effect they were intended to remove. Cathartics should always be made with soap, in the following manner, and then, if given upon an empty stomach, they will be carried off, and will not be dissolved until they get into the large bowels, where their effect is intended to be produced: that is, carrying off all the excrementitious matter that may be lodged in them. When given in this way, they never produce sickness or pain in the stomach, but always operate without pain or danger.

CATHARTIC BALL.

4 drachms to 1 oz. Barbadoes aloes, powdered,
3 to 4 drachms hard soap,
1 drachm ginger,
1 drachm water,
10 drops oil of cloves.

Beat the soap, oil of cloves, and water together in a mortar, so as to form a paste, and if necessary use more water. This being done, add the powdered aloes and ginger, and beat the whole into a ball.

Bleeding, or Phlebotomy.

The operation of blood-letting is now almost discarded in modern practice. It is simple, and can be performed by almost any one with a steady hand. For its performance a fleam and bloodstick are required; the star of the fleam should be large at the shoulder, to make a sufficient opening to allow a free flow of blood, and the blade should be broad, to prevent its sinking in when the vein is deep. The jugular vein of the neck is usually selected to

bleed from. The head should be moderately raised and slightly turned off, the eye next the operator being covered by the hand of

FIG. 888.—Raising the vein.

the assistant holding the head. The left side is easiest operated on; the vein is raised by the pressure of the third and little fin-

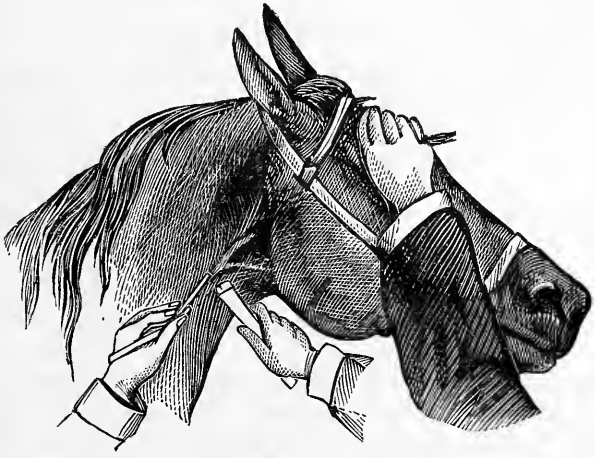


FIG. 889.—Method of placing the fleam.

gers of the left hand, which holds the fleam. It is most superficial about two inches from the angle of the jaw, consequently this point is usually selected for the operation. The vein being raised,

and the hair smoothed down by the moistened finger, the star of the fleam is placed in a line with the course of the vein, with one smart tap of the blood-stick the vein and coats of the vein are punctured, and the blood will flow. When sufficient has been abstracted, the edges of the wound should be carefully taken together, and hairs and clot carefully wiped away; a small pin is passed through them, and a little tow wound round it, and the point of the pin cut off. The head should be tied up for a few hours to prevent his rubbing the pin off.

FIG. 890.—The orifice closed.

SETONS.

Setons are similar in their action to rowels, and are used for much the same purposes. They are usually made of broad white tape. In inserting a seton, the skin is cut with the rowelling scissors as above. A seton needle, which should be large and well polished, is passed in and pushed under the skin as far as is necessary; another cut is then made in the skin, through which it is passed out; the needle in its course should separate the skin on each side from its cellular attachments. The lower opening should always be so placed that the matter will have a dependent outlet. The ends of the seton should be tied to circular pieces of leather, so as to prevent its being pulled through. It is necessary to wash it frequently with warm water, and pull it up and down often, to keep it open, dressing it occasionally with digestive ointment to keep up the discharge.

THE ROWEL.

Rowels are used as counter-irritants in treating deep-seated inflammations; and whenever any morbid disease is to be stopped, as in grease and in thrushes, they have long been favorite remedies among horsemen.

In applying a rowel, the skin is to be taken up between the finger and thumb, and a cut is made in the skin with the rowelling scissors, and with the hook on the handle of the scissors it is separated from its cellular connections for about two inches, and a dossil of tow, or a circular piece of leather, with a hole in it, previously dipped in digestive ointment, is inserted, which must be

cleaned and moved every day. A discharge is soon set up, which has a tendency to remove any deep-seated, morbid action.

Tracheotomy.

It sometimes happens that from the tumefaction of strangles, the impaction of foreign bodies, and other sudden causes of obstruction, the life of the patient is threatened from suffocation. It is found necessary to open the windpipe to avert the untoward result, until the cause of the obstruction be removed.

It consists in making an incision through the skin and muscles in the mesian line down on the trachea, or windpipe, cutting through two rings of this tube, and inserting a bent tube, which is usually made of block-tin, with a broad flange, to which tapes or straps are attached to tie it round the neck. It is usually employed to give temporary relief; but I have known horses to work with a tube in the windpipe for years. It must be frequently taken out and cleaned. When the cause of the obstruction is removed, the tube is withdrawn, and the edges of the skin being scarified, they are carefully brought together, and treated as a simple wound.

Docking, Nicking, etc.

This was a very common operation thirty years ago, but has now gone into entire disuse. Like high checking, it is not only needless, but cruel. There are, however, some cases in which it may be resorted to with advantage, and on this account I include illustrations showing the method of doing it. The principal one is when the horse switches and becomes dangerous when the rein is caught under the tail. The action being involuntary, it cannot practically be broken up by treatment In such a case raising the tail will be found effectual.

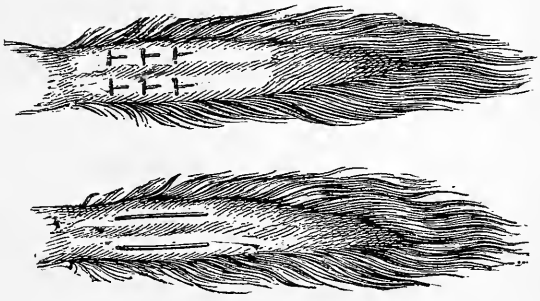


Fig. 891.—Showing the methods of severing the depressing ligaments, from the French.

In performing it, the joint at which it is to be amputated being determined upon, the hair above it is shed back and tied with a cord, the part is clipped close, and the tail being held out by an assistant, with one cut of the docking shears it is severed. The bleeding is stopped by lightly searing with a hot iron with a hole in the center so as not to burn the bone. Some practitioners amputate it so as to leave flaps to cover the bone; by this method the stump is entirely covered by hair, and though more troublesome, is preferable. Too much searing is to be avoided, as exfoliation

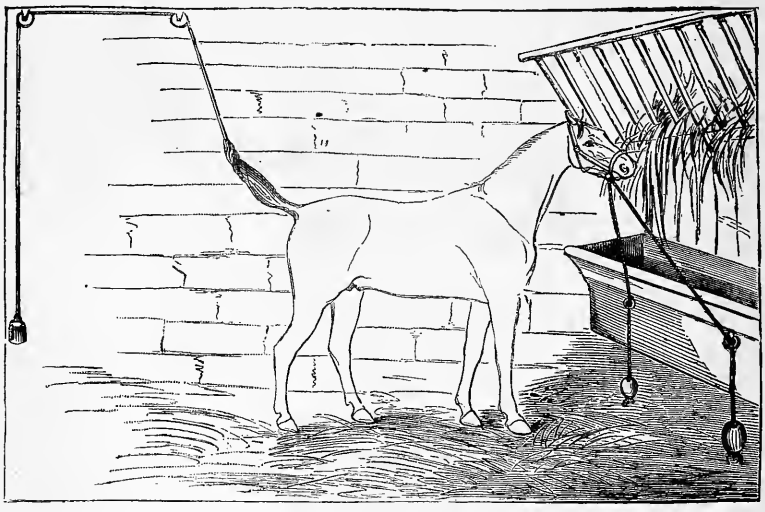


FIG. 892.—Ordinary method of putting the horse in pulleys to raise the tail.

of the bone sometimes follows the injudicious use of the firing iron.

Nicking and pricking are one and the same operation, the latter being an improved method of performing it. The object is to cause the tail to be carried in an elevated position, which is much admired in road horses. It is also performed to set the tail straight when carried awry, which is a serious eyesore to a good-looking horse. Pricking is nothing more or less than tenotomy of the depressor muscles of the tail.

It is best to secure him with a twitch and side line; the hair at the end of the tail is firmly tied, and a loop formed, to which the weight is to be attached. The only instrument used is a long-

bladed scalpel, or the common pricking knife. The tail is raised with the left hand, while with the right the center of the bone is felt for, and the knife is passed in (with its flat surface next the skin) to the opposite side, when the cutting edge is turned toward the bone, and the muscles carefully divided. When simply to straighten a wry tail, if the faulty tendons are discovered and divided, one incision may be sufficient; but in "setting up" a tail,

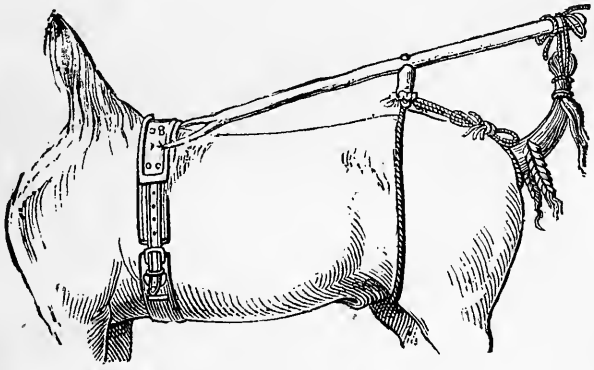


FIG. 893.—The French method of keeping the tail elevated.

two, and sometimes three, are required. The muscles having been thoroughly divided, the tail is supported by means of the double pulley over the back part of the stall; the cord attached to the end of the tail is passed through the wheels of the pulley, and sufficient weight attached to keep the tail elevated, to prevent readhesion of the divided muscles. He should be taken out of the pulleys twice a day and gently exercised; but the pulleys must be continued until the parts have thoroughly healed, and he carries the tail in the manner desired.

EMBROCATIONS

Are external applications in a liquid form, that are rubbed on a diseased part, as in strains and indolent swellings, and as an auxiliary in the treatment of internal inflammation. They are of a stimulating nature, and are greatly assisted by friction. Of this kind are opodeldoc, soap liniment, etc.

EMBROCATONS FOR HARD, INDOLENT TUMORS.

No. 1.—4 ounces olive-oil,
4 drachms camphor. Mix.

No. 2.—2 ounces mercurial ointment,
2 drachms each of olive-oil and camphor.

Embrocations of a more stimulating kind are sometimes employed in swellings of the joints, old strains, or other local affections, such as soap liniment with liquid ammonia, olive-oil, oil of turpentine, and liquid ammonia; but blisters in such cases are generally more effectual.

Embrocations are often improperly employed, as in recent strains, or inflamed tumors, and other cases where emollient or cooling applications are required. Both strains and bruises are at first attended with a degree of inflammation proportionate to the violence of the injury, and the susceptibility of the injured part; therefore they require, at first, such treatment as is calculated to subdue inflammation, as explained under head of Sprains, etc.

ANODYNE LINIMENT.

4 troy ounces castile soap,
2 troy ounces spirits camphor,
½ ounce oil rosemary,
2 pints alcohol,
4 ounces water.

Good for sprains, bruises, rheumatic pains, etc.

LINIMENT OF AMMONIA, OR VOLATILE LINIMENT.

1 ounce strong solution of ammonia,
2 ounces olive-oil, Mix.

To this, camphor or oil of turpentine is sometimes added; and the solution of ammonia is, for some purposes, joined to the soap liniment.

MUSTARD EMBROCATION.

4 ounces flour of mustard,
1½ ounces liquid ammonia,
1 ounce oil of turpentine,

Water, a sufficient quantity to bring it to the consistency of cream. Flour of mustard mixed into a thin paste, with water only, is a powerful stimulant, and may be employed with good effect in cases of internal inflammation, either of the bowels or lungs.

SOAP LINIMENT.

1 ounce hard soap,
1 ounce camphor,
1 ounce oil of rosemary,
1 pint rectified spirits.

Cut up the soap, and let it stand with the spirits until dissolved, then add the rest. Good for sprains, bruises, etc.

Caustics

Are substances which burn away the tissues of the body by decomposition of their elements, and are valuable to destroy fungous growth and set up healthy action. They are, consequently, often required to destroy proud flesh, kill the virus in poisoned wounds, stimulate old ulcers, excite healthy action in fistula, and remove warts, tumors, etc.

Corrosive sublimate, in powder, acts energetically; nitrate of silver is excellent to lower granulation; sulphate of copper is not so strong as the above, but good; chloride of zinc is a powerful caustic, and may be used in sinuses, in solution, 7 drachms in a pint of water; verdigris, either in powder or mixed with lard, is good as an ointment, in proportion of one to three parts. Carrying this treatment to extreme implies using a hot iron, the actual cautery.

Vegetable Caustic.—Make a strong lye of hickory or oak ashes, put into an iron kettle, and evaporate to the consistency of thin molasses; then remove into a sand bath, and continue the evaporation to the consistency of honey. Keep it in a ground stopped glass jar.

This caustic is very valuable in fistulas, cancers, scrofulas, and indolent ulcers, particularly where there are sinuses, necrosis (or decay of bone), and in all cases where there is proud flesh; and also to excite a healthy action of the parts. It removes fungous flesh without exciting inflammation, and acts but little except on spongy or soft flesh.

CHAPTER XXXVII.

FORMULÆ FOR RECIPES AND PRESCRIPTIONS.

In this chapter is given a list of prescriptions, proved by experience to be most valuable. Many of them have been long used by the Veterinary Profession, and have also been recommended and used by the best authorities in Europe and this country. There are also included a large number of chance recipes, obtained by me in various ways, many of them during the past twenty years, taken from my old book, "New System," which have been proved valuable, and which I regard worthy of a place here. Among them are many recipes that have been kept great secrets, and sold at large prices.

Alteratives.

POWDERS.

No. 1.—Tartar emetic, ... 2 ounces.
Nitre (saltpetre), ... 4 " Mix.

Divide into twelve powders, one to be given twice a day in the food. Useful in catarrh, influenza, and skin diseases.

No. 2.—Sulphur, ... 3 ounces.
Nitre, ... 2 "
Antimony, ... 1½ " Mix.

To be divided into six powders, one daily in the food. Useful in skin diseases.

BALLS.

No. 1.—Barbadoes aloes, . . . 10 drachms.
Castile soap, ... 12 "
Powdered carraway seed, . 12 "
Powdered ginger, . . . 4 "

Molasses or palm-oil sufficient to form a mass. Divide into six balls, one to be given every morning till the bowels are freely opened. Useful in hide-bound, costive bowels, and skin diseases.

No. 2.—Barbadoes aloes, . . . 10 drachms.
Calomel, ... 2 "
Powdered fenugreek, . . 12 "
Ginger, ... 4 "
Oil of cloves, ... 40 drops.

Soft soap sufficient to form a mass. Divide into four parts, one every second day. While taking these, he must have mashes, chilled water, etc., and be carefully preserved from cold and damp. Useful in hide-bound, grease, unthrifty condition, etc.

No. 3.—Tartar emetic, ... 6 drachms.
Calomel, ... 3 "
Sublimated sulphur, . . . 3 ounces.

Common mass sufficient to form six balls of an ounce each; one daily. Useful in mange, worms, and skin diseases.

DIURETIC ALTERATIVES.

POWDERS.

No. 1.—Resin, finely powdered, . . 2 ounces.
Nitre, ... 1½ "
Linseed meal, ... 3 " Mix.

Divide into six balls; one daily. Regulate the kidneys and improve the coat.

BALLS.

No. 1.—Powdered resin, ... 4 ounces.
Castile soap, ... 3 "
Venice turpentine, ... 2 "

Powdered carraways sufficient to form the mass. Divide into balls of a convenient size; one daily, till diuresis is produced. Useful in swelled legs, dropsical effusion, weed, etc.

ANTACIDS.

No. 1.—Prepared chalk, ... 4 ounces.
Powdered ginger, ... 1 "
Barbadoes aloes, ... 1 "

Common mass sufficient to make six balls of convenient size; one daily. Useful in acidity of the stomach and indigestion.

No. 2.—Carbonate (bicarbonate) soda, . 3 ounces.
Gentian and ginger, of each, . . 1 "

Molasses sufficient to make a mass. Divide into four parts; one night and morning.

ANTISPASMODICS.

No. 1.—Sulphuric ether, ... 1 ounce.
Infusion of opium, . . . 2 "
Peppermint water, ... 1 " Mix.

To be given in a quart of cold water. Useful in flatulence, spasm, etc.

No. 2.—Ether and chloroform, of each, . ½ ounce.
Tincture of opium, . . . 2 "
Tincture of cardamoms, . . 1 "
To be given in a quart of water. Useful in colic.

No. 3.—Spirits of ammonia (aromatic), . 2 ounces.
Dilute hydrocyianic acid, . . 20 drops.
Tincture of ginger, . . . 2 ounces.
To be given in a quart of beer, well shaken. Useful in spasmodic colic, etc.

ANODYNE DRAUGHT, OR DRENCH.

No. 4.—Tincture of opium, . . . ½ to 1 ounce.
Spirits of nitrous ether, . . . 1 to 2 "
Essense of peppermint,* . . 1 to 2 drachms.
Water, ... 1 pint.

ANODYNE CARMINATIVE TINCTURE.

No. 5.—Best Turkey opium, . . . 1 ounce.
Cloves, bruised, ... 2 "
Jamaica ginger, bruised, . . 3 "
Old Cognac brandy, . . . 1 quart.—*(White.)*

Either of these recipes will be found a good remedy for flatulent or spasmodic colic. In the anodyne draught warm beer may be substituted for water. It should be recollected that when the colic is attended with costiveness, clysters and oily and saline laxatives are necessary, either in addition to the anodyne, or after the anodyne is exhibited. For other prescriptions, see Colic, page 886.

Drench for Stomach Staggers.

No. 1.—Barbadoes aloes, ... 5 drs. to 1 oz.
Calomel, ... 2 drachms.
Oil of peppermint, ... 20 drops.
Warm water, ... 1 pint.
Tincture of cardamoms, . . 2 ounces.
Mix, and give at one dose.

Astringents.

No. 1.—Powdered opium, ... 1 drachm.
Powdered catechu, . . . 2 "
Powdered chalk, ... 1 ounce.
To be given in arrow-root, starch, or thick flour gruel. Useful in diarrhœa or superpurgation.

* Essence of peppermint consists of the essential oil of peppermint dissolved in spirit of wine: one part of the former to three of the latter.

No. 2.—Powdered catechu and alum, of each, 2 drachms.
Powdered opium, . . . 1 "
Powdered ginger, ... 2 "
Oil of cloves, ... 10 drops.
Molasses to form a ball. Useful in superpurgation, diarrhœa, etc.

No. 3.—Opium and acacia gum, of each, . 1 drachm.
Prepared chalk, . . . 4 ounces.
Carefully dissolved in warm water, and given in plenty of flour or starch gruel, which, alternated with linseed tea, is to be often repeated.

DRYING POWDERS.

No. 1.—Prepared chalk, ... 4 ounces.
Sulphate of zinc, . . . 1 "
Charcoal, ... 1 "
Armenian bole, . . . 2 " Mix.
To be finely powdered, and dusted over raw surfaces. Useful for healing wounds.

No. 2.—Powdered alum, ... 4 ounces.
Armenian bole, ... 1 " Mix.
To be powdered, and used as above.

No. 3.—Sulphate of zinc, ... 2 ounces.
Oxide of zinc, ... 1 " Mix.
To be used as above.

ASTRINGENT LOTION.

No. 1.—Sulphate of zinc, . . . 6 drachms.
Sugar of lead, ... 1 ounce. Mix.
To be dissolved in a quart of water. Wet the wound twice a day with the lotion, well shaken. Useful for wounds, bruises, etc.

ASTRINGENT OINTMENT.

No. 1.—Resin ointment, ... 4 ounces.
Oil of turpentine, . . . 1 "
Powdered sulphate of copper, . . ½ "
Mix, and make an ointment. Useful for tardy sores and fungus growths.

BLISTERS.

OINTMENTS.

No. 1.—Lard, ... 12 ounces.
Canadian turpentine, . . . 2 "
Powdered cantharides. . . . 3 "
Melt the lard and turpentine, stir in the flies, keep stirring till cool.

No. 2.—Lard, ... 3 pounds.
Flies, ... 1 "
Euphorbium, ... 4 drachms.
Palm oil, ... 1 pound.

Melt the lard and oil over a slow fire, and when cooling, stir in the other ingredients.

No. 3.—Lard, ... 1 pound.
Turpentine, ... 4 ounces.
Powdered flies, ... 3 "
Biniodide of mercury, . . . 6 drachms.

To be thoroughly incorporated. Useful for splints, spavins, ring-bones, and enlargement of glands.

No. 4.—Lard, ... 1 pound.
Bee's wax, ... 4 ounces.
Biniodide of mercury, ... $2\frac{1}{2}$ "

Melt the lard and wax, and the biniodide, and stir till cold. Useful for enlargement of bone or glandular tissues.

LIQUID BLISTERS.

No. 1.—Rectified spirits of wine, . . 15 ounces.
Powdered cantharides, . . . 1 "
Powdered camphor, . . . $\frac{1}{2}$ "

Macerate for ten days. To be used as a sweating blister.

No. 2.—Olive-oil, } equal parts.
Oil of turpentine, } equal parts.
Aqua ammonia, } equal parts.

To be well shaken. Useful for sore throat, chronic swelling, and callous enlargements.

COLIC MIXTURES.*

No. 1.—Linseed oil, ... 1 quart.
Tincture of opium, ... 2 ounces.
Oil of turpentine, ... 2 " Mix.

To be given as a drench.

No. 2.—Linseed oil, ... 1 pint.
Tincture of opium, ... 2 ounces.
Sweet spirits of nitre, ... 2 " Mix.

As a drench.—*(Dick.)*

No. 3.—Aromatic spirits of ammonia, . . 1 ounce.
Whisky, ... 2 "
Oil of peppermint, ... 20 drops.
Water, ... 1 quart. Mix.

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* See also Antispasmodics, page 1051.

No. 4.—Alkaline solution of aloes, . . 4 to 6 ounces.
Oil of peppermint, . . . 30 drops.
Tincture of opium, ... 2 ounces.
Water, ... 1 quart. Mix.

Collyria (Eye-Waters).

No. 1.—Nitrate of silver, ... 2 to 10 grains.
Rain, or distilled water, . . 1 ounce.
Infusion of opium, ... 5 drops. Mix.

To be applied to the eye with a feather or camel's-hair pencil. Useful in opacity of the cornea, specific ophthalmia, etc.

No. 2.—Sulphate zinc, ... $\frac{1}{2}$ drachm.
Acetate of lead, ... 1 drachm.
Distilled water, ... 16 ounces. Mix.

To be used as above.

Common Mass.

Linseed meal, } equal parts.
Molasses, }

Very useful in making up balls.

Compound Camphor Liniment.

Camphor, ... 2 ounces.
Spirits of lavender, ... 1 pint.
Liquor ammonia, ... 6 ounces. Mix.

Useful in sprains, or as a mild blister.

Compound Iodine Liniment.

Iodine, ... 1 part.
Soap liniment, ... 8 parts.

Mix, and shake well. Useful in sprains, thickened tendons, enlarged glands, etc.

Condition Balls.

No. 1.—Powdered ginger, ... 1 drachm.
Powdered gentian, . . . 3 "
Sulphate of iron, ... 2 "

Molasses sufficient to form a mass. To be made into one ball. Improves the appetite, and stimulates digestion.

No. 2.—Powdered ginger, ... 1 drachm.
Allspice, ... 2 "
Caraway seed, ... 3 "

Molasses to form a ball. As above.

Cordial Drench.

No. 1.—Good old beer (warm), . . 1 quart.
Powdered ginger, ... ½ ounce.

Shake well. To be given in exhaustion, and recovery from debilitating diseases.

No. 2.—Best brandy, ... 2 to 4 ounces.
Molasses, ... 3 ounces.
Warm water, ... 12 "

As above.

Veterinary Aromatic Powder.

Powdered caraway seeds, . . 6 ounces.
Powdered allspice, ... 4 "
Jamaica gingered, powdered, . 2 "
Liquorice powder, ... 2 " Mix.

This is a good cordial powder, and may be given in a dose of two or three drachms in warm ale, in such cases as require the use of cordials. If the form of a ball is preferred, it may be obtained by beating up a dose of the powders with a little molasses.

Cough Balls.

[See also Chronic Cough.]

No. 1.—Calomel, Opium, Camphor, Digitalis, } of each, 1 drachm.

Made into a ball, with molasses. One daily, till six are given, when a gentle laxative should be administered.—*(Dick.)*

No. 2.—Digitalis, ... ½ drachm.
Camphor, ... 1 "
Tartar emetic, ... 1 "
Linseed meal, ... 1 "
Nitrate of potass, ... 3 "

To be made into a mass, with Barbadoes tar. Useful in chronic cough. Used as above.—*(Spooner.)*

No. 3.—Gum ammon, ... 2 to 3 drachms.
Powdered squills, ... 1 drachm.
Camphor, ... 1 "
Castile soap, ... 2 "
Oil of anise, ... 20 minims.

Sirup and flour sufficient to form a ball.—*(White.)*

No. 4.—Barbadoes aloes, ... 3 ounces.
Common mass, ... 13 "
Powdered digitalis, ... 1 "
Make into sixteen. One daily.—*(Gamgee.)*

Decoction of Aloes.

Barbadoes aloes, ... 2½ ounces.
Bicarbonate potass, ... 2 "
Acacia gum, ... 2 "
Boiling water, ... 1 pint. Mix.
If required to keep, two ounces of alcohol may be added.—*(Percival.)*

Drench for a Cough.

Bruise 3 ounces of fresh squills in a mortar, or 4 to 5 ounces of garlic, and macerate them in 12 ounces of vinegar in a slow oven or on a hot plate for one hour; strain off the liquid part, and add to it 1 pound of treacle, or honey. The dose in bad coughs is 3 to 4 ounces. If there exists much irritation, a tablespoonful of tincture of opium may be added to every 6 ounces.

Digestives

Are medicines which promote suppuration in ulcers, and cause them to discharge a white, healthy matter. This term is commonly applied to ointments and other preparations which improve the state or condition of ulcers or sores, and cause them to discharge good matter. Medicines that promote the digestion of food are termed tonics, stomachics, and cordials.

DIGESTIVE OINTMENTS.

No. 1.—Powdered resin, ... 1 pound.
Lard, ... 1 "
Oil of turpentine, ... 2 " Mix.
Dissolve the resin and lard, and stir in the turpentine. Usefnl for stimulating unhealthy wounds, keeping up the action of blisters, and smearing setons.

No. 2.—Hog's lard, . . } of each 4 ounces.
Common turpentine, . } of each 4 ounces.
Melt over a slow fire, and add 1 ounce powdered acetate of copper. Stir till cold, and use as above.

No. 3.—Vaseline and strained turpentine, of each, ... 4 ounces.
Verdigris, ... 1 " Mix.

No. 4.—Hog's-lard or vaseline, and Venice turpentine, of each, . . 4 ounces.
Sulphate of copper (blue vitriol, powdered finely), ... 1 " Mix.

No. 5.—Ointment of yellow resin, . . . 4 ounces.
Oil of turpentine, ... 1 "
Nitric oxide of mercury (red precipitate), finely powdered, . . 1 " Mix.

Friar's Balsam.

Friar's Balsam, or compound tincture benzoin, is made in the following manner:—

Benzoin, ... 3 ounces.
Storax Balsam, strained, . . . 2 "
Balsam of tolu, ... 1 "
Extract of spiked aloes, . . . ½ "
Rectified spirit, ... 2 pints.

Macerate for fourteen days (seven days, dub.), and filter or strain through blotting paper. The properties of this tincture are stimulating and expectorant, and it is therefore prescribed by some in combination with other remedies, in cases of old chronic cough or broken wind. As it is decomposed by water, it should first be amalgamated with mucilage or yolk of egg, in order to suspend it in aqueous liquids, when given internally. However, its principle use is that of a stimulant external application to indolent sores or wounds.

Diuretic or Urine Balls.

No. 1.—Soap, . . }
Resin, . . . } of each, ½ ounce.
Nitre, . . }

One every second day till two or three are given. Useful in swelled legs, grease, etc.

No. 2.—Nitre, ... 3 drachms.
Powdered resin, ... 4 "
Oil of juniper, ... ½ fluid drachm.
Powdered ginger, . . . 1 scruple.
Soft soap sufficient to form a ball.

No. 3.—Powdered resin, ... 4 drachms.
Powdered nitre, ... 3 "
Powdered ginger. . . . . 1 "
Palm-oil sufficient to form a ball.

Liniment for Bad Thrush and Canker.

No. 1.—Tar, ... 4 ounces; melt, and add
Muriatic acid, ... 6 drachms.
Verdigris, ... 4 " Mix.
Continue stirring until it is cold,

No. 2.—Tar melted, ... 1 pound.
Strong sulphuric acid, by weight, 2 ounces.
Stir them well together for some time, and immediately before the mixture is used.

Diuretic Mass.

Common resin, ... 3 pounds.
Soft soap, ... 2 "
Melt over a slow fire, and when cool add
Nitre (powdered finely), . . 2 "
Venice turpentine, . . . 10 ounces.
To be made into balls as required. Dose, 1 ounce.

Fever Mixtures.

No. 1.—Nitre, ... 1 pound.
Tartar emetic, ... ½ "
Camphor, ... 4 ounces.
Common mass as much as is sufficient to form a mass. Dose, 1 ounce, made into a ball. One every three hours, while fever lasts.

No. 2.—Tincture of aconite, . . . 10 to 15 drops.
To be given every two hours in a little water till fever subsides.

No. 3.—Calomel and opium, of each, . . 1 drachm.
Common mass, ... 6 "
Made into a ball as above. Useful in inflammation of the lungs, etc.

Hoof Ointment.

Archangel tar, ... 1 pound.
Tallow, ... ½ "
Bee's wax, ... 4 ounces.
Melt together, and stir till cool. Useful dressing for weak feet, keeping the hoof soft, and stimulating the growth of horn.

Goulard's Extract.

Sugar of lead, ... 6 ounces and 6 drachms.
Litharge (powdered), ... 4 "
Water, ... 1½ pint.
Boil for half an hour, and when cool, if required, add water to make a pint and a half; filter, and keep in well-stoppered bottles. Useful in bruises, inflammation of the eyes, skin eruptions, etc.

Iodine Ointment.

Iodine, ... 1 drachm.
Iodide of potassium, ... ½ drachm.
Lard, ... 1 ounce. Mix.

Useful in glandular and bony enlargements, mallenders, sallenders, ring-worm, etc.

Lice Mixture.

Olive-oil, ... 1 quart.
Oil of tar, ... 3 ounces. Mix.

To be well shaken. Wash well with soap and water, rub dry, and rub well in. At the same time feed well.

Mange Ointment.

Linseed, or train oil. . . . . 8 ounces.
Oil of tar, ... 2 "
Sulphur, ... 4 " Mix.

Shake well, and wash with soap and water; then rub the mixture well in, washing every second day.

Purgatives.

PURGATIVE DRENCH.

No. 1.—Linseed or castor oil, . . . 1 quart.

PURGATIVE DRENCH FOR OBSTINATE CONSTIPATION.

No. 2.—Linseed oil, ... 1 quart.
Croton oil, ... 20 drops. Mix.

Tonic Powders.

No. 1.—Sulphate of iron, ... 3 ounces.
Arsenious acid, ... 1 drachm. Mix.

Powder the iron finely, and divide into twelve powders; then add the arsenic (five grains) to each. One night and morning in the feed. Useful in loss of appetite and recovery from debilitating diseases.

No. 2.—Sulphate of copper, ... 2 ounces.
Ginger, ... 1 "

Powder and divide into twelve; one night and morning. Useful in farcy, nasal gleet, and chronic discharges.

Tonic Mass.

No. 1.—Ginger (powdered) gentian, Carraway seed and anise seed, } equal parts.

Molasses sufficient to form a mass. Dose, one ounce in a ball night and morning.

No. 2.—Ginger, gentian, and sulphate of iron,
of each, ... 2 pounds.
Lard, ... 1 "
Molasses, ... 5 " Mix.

The sulphate of iron to be finely powdered, and thoroughly incorporated with the other ingredients; the lard and molasses to be dissolved, and the mixed powder to be stirred in. Dose, one ounce night and morning.

Worm Powders.

Tartar emetic, ... 2 drachms.
Linseed meal, ... 1 ounce.

To be given night and morning in a little bran, or on an empty stomach.

Worm Balls.

No. 1.—Gentian quassia, camphor, sulphate
of iron, of each, ... 2 drachms.

Made into a ball with common mass.—*(Dun.)*

No. 2.—Assafœtida, ... 2 drachms.
Calomel and savin, of each, . . $1\frac{1}{2}$ "
Oil of male fern, . . . 30 drops.

Common mass sufficient to form a ball given at night, and a purge in the morning.—*(Gamgee.)*

Worm Drench.

Linseed oil, ... 1 quart.
Oil of turpentine, ... 2 ounces.

To be prepared by bran mashes for two days; allowed to fast for at least eight hours, when the drench is to be carefully given; and, if thought necessary, repeated next morning, and followed by a purgative.

RECIPES FROM THE AUTHOR'S OLD BOOK (THE NEW SYSTEM), AND OTHER SOURCES,

Which have not been included in previous chapters. Among these are many recipes valued highly by persons having the old book. For the benefit of such I give them a place here.

Charges.

Adhesive plasters which are softened or liquefied in a ladle by a gentle heat, and then applied to the legs, from the knee and hock joints to the foot, as a remedy for wind galls and old lamenesses, arising from strains or hard work, or to the back in strains of that part. As soon as the plaster is applied, the part is covered with short tow, and the horse sent to grass.

A CHARGE.

No. 1.—2 ounces yellow resin, 4 ounces burgundy pitch, 2 ounces Barbadoes tar, 3 ounces bee's wax, 4 ounces red lead. The first three are to be melted together, and then the latter is to be added. The mixture is to be constantly stirred until sufficiently cold to be applied; and if it proves too thick when cold, it may be softened with a little oil or lard.

Grain Founder.

Take three pints of vinegar, into which put six red pepper pods, and boil until reduced to one quart. When cool, give as a drench. Blanket the horse warmly. This will put the horse in a profuse perspiration, and perform a perfect cure. The gentleman of whom I got this cured a valuable horse that got into his granary and ate so much grain that he was in the morning perfectly stiff. One dose made a perfect cure. He said he would not be without it for one hundred dollars.

Condition Powder.

½ lb. grains paradise (ground), ½ lb. ground ginger, ¾ lb. powdered gentian, 6 ounces cumin seed (ground), 6 ounces fenugreek (ground), 6 ounces carbonate soda, 6 lbs. common brown sugar, 1¾ lbs. salt. Put in one hundred pounds of meal. Dose: one pint to be given with the usual food.

This is considered one of the best tonic condition powders ever used. It is sold in the Eastern cities at a large price, under the name of Condition Food, and is held as a secret of great value. I have known $50 to be refused for the recipe.

A Very Fine Healing Preparation for Cuts.

Equal parts tincture myrrh and balsam copiaba. To be used once a day. This is the favorite remedy of one of the most successful horsemen in the country. It is one of the best of healing remedies.

A Good Application to a Putrid Ulcer.

To remove fœtid smell of fistulous withers, poll evil, canker, and wounds, dilute chloride of lime, with twenty times its quantity of water, and dress with it whenever there is an offensive discharge. Mix a poultice with this preparation, and put it on. It will remove all smell, and cleanse by its action.

For Strain or Inflammation.

Whenever there is much inflammation from strain or wounds, take—

1 pound saltpetre, 1 gallon hot water. When cool, add 1 quart best whisky. Saturate a sponge or cloth with the preparation, and keep the part thoroughly wet with it.

To Cure Cuts or Bruises of the Cheeks.*

They are liable to occur in some peculiar cases when using third method of subjection. Use inside,—

1 drachm tannin to ½ oz. borax, 3 to 4 parts water. Swab once a day inside the wound. For outside dressing use 1 ounce tincture of myrrh, 2 ounces tincture aloes, ½ pint water.

If the horse is troublesome, liable to strike, tie with a strong halter, rather short, to the manger; then tie a rope or strong strap around the neck, bring back between the fore legs, around the near hind leg, and back through the loop around the neck; pull short enough to raise the foot from the ground to make fast. The horse is now unable to rear, and will stand quietly to have the parts dressed. Repeat dressing once a day, until cured.

A great deal of trouble will be prevented when there is bruising of the cheeks, as stated, by bathing with hot water, and dressing with calendula. The bathing must be continued until the inflammation is reduced, then dress with the calendula; but if neglected, suppuration is liable to follow, making holes in the cheeks, when the treatment must be as above.

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* This prescription was given the writer by Dr. Braily, chief veterinary surgeon of the U. S. Cavalry during the Rebellion. It will be found all that can be desired for healing all wounds inside cheeks or mouth.

To Grow Hair on the Mane or Tail.

Add as much sulphur to castor oil as will make it thick as cream, and rub into the roots of the hair two or three times a week. This was obtained by the writer nearly twenty years ago in Maine. From some cause, one of my horses (Turco) rubbed the hair off his tail so as to spoil it. The skin was smooth and glossy, and apparently beyond hope of new hair growing in. Some one told me to apply the above, and in a short time a heavy growth of hair started, and grew to full length.

In 1873, in defiance of all that could be done, Gifford (one of my pair of trained horses) lost all the hair from his tail. The above was well rubbed into the dock two or three times a week, and a heavy growth of hair was soon started, which, in time, made a fine tail.

Astringent Ointments.

No. 1.—4 ounces Venice turpentine, 1 ounce bee's wax, 4 ounces vaseline. Melt over a slow fire; and when rather cool, but when it is liquid, add 1 ounce sugar of lead, or 2 ounces alum, finely powdered. Stir the mixture until it is cold.

No. 2.—1 drachm red nitrated mercury, commonly named red precipitate, rubbed down to a very fine powder; 2 ounces calmine cerate, commonly named Turner's cerate. Mix.

Remark.—The astringent powders and ointments are designed chiefly as remedies for the grease, after the inflammation of the part has been in a great measure removed by proper poultices; but the ointment is applicable only to those ulcerations or cracks which are sometimes an effect of that disease; and often occurring from other causes.

Goulard's Extract.

This is made from litharge and vinegar, by simmering them together over a gentle fire, until the vinegar has dissolved as much as it is capable of doing. It is a very useful application in cases of external inflammation, and may be used either as a lotion or in the form of a poultice. Goulard lotion is made by mixing half an ounce of the extract in a pint of soft water. Some add to this a little camphorated spirit, or some distilled vinegar; but when the lotion is intended for the eyes, there must be a much larger portion of water, not less than a quart, and the lotion should be filtered.

Goulard poultice is made by mixing as much of the lotion with bran, linseed meal, or any proper materials for a poultice, as will give them a proper consistence. Goulard is never used undiluted, nor is it given internally.—*White.*

* Fissure, or Sand Crack, in Front of Hoof

Is most common in the hind feet of draught horses. It is caused by disease of the coffin-bone; the pyra-medal process, or front of the bone, being affected. Save all horn in toe possible, especially the bottom clips, to be taken up on each side of toe; but must not be hammered down tightly when the shoe is on. They must simply be tight, without giving constraint.

For treatment, take 1 ounce each of tar and resin, ¼ ounce tallow; melt together. Apply this, while warm, to the fissure of

Fig. 894.—Fissure, or toe crack.

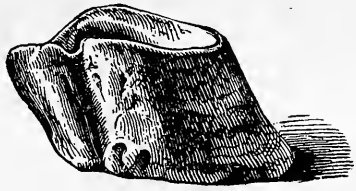

Fig. 895.—An old quarter crack.

the hoof and coronet, then place a layer of tow over the dressing, and bind the ball of the foot with a broad, coarse tape, rather tight. All that can usually be done is to palliate, a cure can rarely be accomplished.

Mr. Gamgee has given a great deal of attention to this difficulty, dissecting a large number, and in all cases found the bone diseased. He advises the above treatment, which is all that can be done.

To Cure Weakness and Weeping of the Eyes—the Lids Swollen and the Eyes Weak.—For Horses.

An old man's remedy. Claimed that he never failed in curing with it.

Take saltpetre, 1½ oz.; sulphate of zinc, 1 oz.; sugar of lead, 1 oz. Mix all with a pint of vinegar and a quart of soft water. Take a small sponge; fill with it and squeeze in the hollow over the eye once a day until a cure is effected.

Cough Powders.

An excellent remedy: Licorice root (powdered), fenugreek, lobelia, blood-root, camphor gum, equal parts. Dose—tablespoonful two or three times a day in feed. In all cases of acute or

* This was intended to follow Quarter Crack, page 691, but was passed over when that matter was put in type.

chronic cough, if thickening of glands of neck, stimulate outside neck sharply.

For Removing Callouses or Thickening, Curbs or Bunches of any Kind.

Oil origanum, oil spike, oil amber, spirits turpentine and camphor, 1 ounce each. Rub on thoroughly two or three times a week.

When in Ohio, the writer bought a fine work horse very

Fig. 896.—Thickening of the tendons, caused by banging or striking the part. (Belongs to article on p. 1001.)

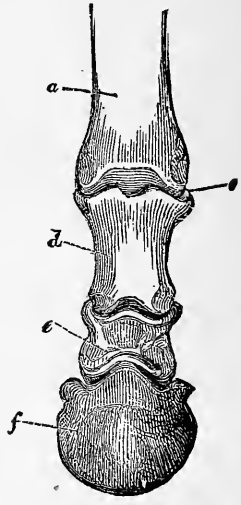

Fig. 897.—Front view of bones of the fore foot. (Belongs to article on Foot-Lameness, on page 945.)

cheap, on account of having a very bad curb on one of his legs, making a very disagreeable blemish. He was purchased late in June and kept constantly to the hardest pulling as a wheel horse. A little of the above medicine was rubbed on about once a week, sometimes oftener, and again would frequently neglect doing so for more than that time. By fall the enlargement was all gone, and the leg was as smooth and well as the one opposite.

Magic Liniment.

Two oz. oil of spike, 2 oz. origanum, 2 oz. hemlock, 2 oz. worm-wood, 4 oz. sweet oil, 2 oz. spirits ammonia, 2 oz. gum camphor, 2 oz. spirits turpentine, and 1 quart proof spirits—90 per cent. Mix well together, and bottle tight. For sprains, bruises, lameness, etc., in man, this liniment, without turpentine, is unrivaled.

This prescription was obtained by the writer twelve years ago, in Onondaga Co., N. Y. Much was claimed for it; that it would cure lame back, bruises, sprains, etc., and with the turpentine worked well upon horse flesh. My attention has been particularly called to it during the past two years by parties who used it. In Niagara Co., N. Y., a gentleman, in looking over his book after the school, pointed to it, saying: "There is a receipt I would not take $50 for." He said a very fine horse in that neighborhood a few years ago got strained in the back so badly that he could not get up in consequence. A negro from Syracuse took the horse in charge, made and applied a liniment to the back, bathing it in thoroughly twice daily. There was rapid improvement; the animal being soon able to get up, and got entirely well. He offered the negro $10 for the recipe, without avail; that he made the nigger drunk and stole the recipe from him; "and," said he, "that's it exactly." He took down a bottle from a shelf in the sitting-room (in Charlotte, Niagara Co., N. Y.), saying: "Here is some of it; they could not keep house without it here. For toothache, neuralgic pains, sprains, etc., the landlady said it was indispensable; that they kept it always in the house." This was corroborated by others.

At Clifton Springs, Ontario Co., N. Y., during my last tour through that section in 1874, a gentleman pointed out the same prescription taken from my old book, and said he would not take $100 for it; that he had cured 40 cases of neuralgia with it; that he put up the medicine as a specialty for that purpose, at $1.00 a bottle; first making it up for his wife, who was troubled with neuralgia, curing her. It was used by others with the same result. The demand becoming so great that he put it up as a specialty, and had thus secured a large local sale of it.

A Good Application to a Putrid Ulcer.

To remove fetid smell of fistulous withers, poll evil, canker, and wounds, dilute chloride of lime with twenty times its quantity of water, and dress with it whenever there is an offensive discharge; mix a poultice with this preparation, and put it on. It will remove all smell, and cleanse by its action.

Best Cordial for a Horse.

The following is the best cordial for a horse that is old, has lost his appetite, and is recovering slowly from sickness, or for an old horse that has been worked too hard:—

Four parts each of carraway powder and bruised raisins, and two each of ginger and palm oil, beaten into a mass. This is harmless, and is one of the very best.

To Cure Weak Back.

O. J. Madison, livery keeper and large dealer in horses, of Massillon, Ohio, a few years ago, cured several very bad cases. One horse was so weak that he would fall down and could not get up;

said it would cure any case of weak back, and that he never knew it to fail.

Give one grain of strychnine night and morning; next take equal parts of pine tar and pitch, warm until it spreads easily, and spread over the small of the back, from the hip forward ten inches, and across to almost the points of the hips; then spread on cantharides (should be well pulverized) until the pitch is thoroughly covered; then cover with two thicknesses of cotton flannel.

A stiff sticking plaster of this nature is called a charge, and the following is one of the best formulas:—

Burgundy pitch or common pitch, 5 ounces; tar, 6 ounces; yellow wax, 1 ounce, melted together, and when they are becoming cool, half a drachm of powdered cantharides well stirred in. This must be partially melted afresh when applied, and put on the part with a large spatula as hot as it can be without giving too much pain. Tow or cotton should be scattered over it while it is warm, which forms a thick, adhesive covering, that cannot be separated from the skin for months.—*Youatt.*

Dr. Sheldon's Treatment for Worms.

Dr. Sheldon says it never fails to clean the worms out of a horse.

1st. Bran mash. In 24 hours give 1 drachm of santomine, which should be dissolved in water; then mix in a quart of starch, and give as a drench; in 30 minutes give aloes in solution sufficient to move the bowels promptly.

For Bruise and Cut on Man or Horse.

A favorite prescription of great value.

Laudanum, 1 oz.; arnica tinct., 1 oz.; sassafras oil, 1 oz. Mix, bandage lightly, when possible, and keep wet. Said the gentleman who gave the above prescription, I bruised one of my fingers terribly, literally smashing nail and flesh. I was in the greatest pain. When, after hours of suffering, a gentleman from New York accosted me, and learning my trouble, said for thirty cents I can relieve and cure you. He gave me this prescription. I had it put up, kept my fingers wet with it during the night, and next day there was no pain, and in two days my finger was well. It removes all fire and pain and heals by first intention.

To Recruit a Horse Hide-Bound or Otherwise Out of Sorts.

Nitrate potassa (or saltpetre), 4 oz.; crude antimony, 1 oz.; sulphur, 3 oz. Nitrate of potassa and antimony should be finely pulverized, then add the sulphur, and mix the whole well together. Dose: A tablespoonful of the mixture in a bran mash daily, for a week or two.

This is the favorite prescription used by one of the best horsemen I ever knew, who was also a leading physician. He kept it

a secret, but gave it to the writer on condition it should not be made known in his neighborhood.

The Great Tanning Preparation.

This is the great secret sold a few years ago for tanning all kinds of skins with the hair on. The secret and right to use it were sold through the country at large prices:—

To two pails of water add 2 lbs. alum; 2 qts. salt; 2 lbs. Epsom salts; 2 oz. oil vitriol. Wet and scrape the meat and oil out; then pur the skins into the liquid, and let stand from eighteen to twenty-four hours.

For Scratches,—a Valuable Remedy.

Sweet-oil, 6 oz.; borax, 2 oz.; sugar of lead, 2 oz. First wash

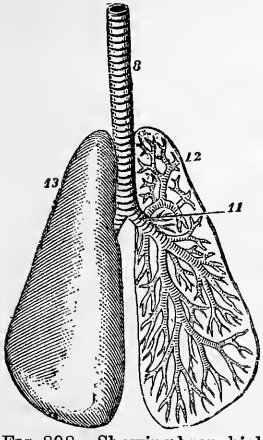

Fig. 898.—Showing bronchial tubes. (Belongs to Bronchitis, page 885.)

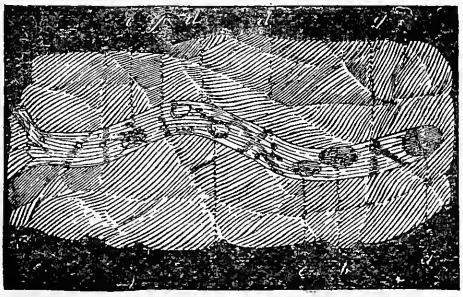

Fig. 899.—Showing parasites burrowing in the skin, magnified. (This cut belongs to the article on Mange, but could not be found when making up.)

clean with soft water and castile soap; when dry, apply once a day. This is a good thing.

For Inflamed Leg, Galled Shoulders or Back.

Sal ammoniac, 1 oz.; vinegar, 4 oz.; spirits of wine, 2 oz.; tincture arnica, 2 drachms; water, ½ pint. Mix, and bathe with it often and thoroughly.

Wash for Reducing an Inflamed Wound.

One oz. sulphate of zinc, 1 oz. crotus martes, ½ oz. sugar of lead, 1 pint water. A sore will not smell bad when this wash is used.

For Fresh Strains, etc.

Carbonate ammonate, 2 ounces; apple vinegar, ½ gill. Rub in well.

A Fine Simple Liniment.

Two parts ammonia to 4 parts of soft water. Good for strains, etc.

To Reduce Swelling of the Legs and Strengthen the Tendons after Hard Driving.

A favorite remedy on Long Island. One pint alcohol, 1 ordinary sized beef gall, 1 ounce organum, 1 ounce oil of spike, 1 ounce gum myrrh, ½ ounce camphor gum. First wash and rub clean and dry. Then bathe with the liniment and rub dry. Then apply again and bandage the leg, being careful not to bandage too tight.

This is the best liniment for the purpose recommended I have ever used. It should be kept in every stable.

Condition Powders.

Take 1 pound of ginger, 1 ounce of anise seed, pulverized, 1 ounce of fenugreek seed, 2 ounces of ginseng root, pulverized, 1 ounce of the seed of sumach berries, pulverized, 1 ounce of antimony; mix it with one pound of brown sugar. This is excellent for coughs, colds, or to give a horse an appetite.

To Cure Cough.

Put into alcohol all the tar it will cut, and add one-third in quantity of tincture belladonna. Dose: from one to two teaspoonfuls once or twice a day. Very good.

Cough Powder.

Fenugreek, ginger, licorice and blood-root, equal parts. Half proportion lobelia and camphor may be added. Dose: tablespoonful twice a day. For heaves, add more camphor.

Diuretic Drops

That are reliable for stoppage of water, foul water, or inflammation of the kidneys, in all cases:—

Take of sweet spirits of nitre, 4 oz.; balsam copaiba, 2 oz.; oil of juniper, 2 oz.; spirits of turpentine, 2 oz.; gum camphor, pulverized, 1 oz. Mix all together, and shake well, bottle, and it is fit for use for man or beast, under all circumstances where a diuretic is required.

Dose: for a horse, 1 oz. in half a pint of milk once in six hours; for a man, 1 teaspoonful in a tablespoonful of milk once in six

hours. Be sure to shake the ingredients up well before turning out for use.

Drenches to Promote Parturition.

Ergot of rye in fine powder, 2 or 3 drachms; pennyroyal water or infusion of rue, 1 quart.

For Diabetes.

Opium, 1 drachm; ginger, 2 drachms; oak bark (peeled), 1 oz.; decoction of oak bark, 1 pint.

Cordial and Anodyne Ball.

Castile soap, 3 drachms; camphor, 2 drachms; ginger, 1½ drachms, and Venice turpentine, 6 drs. made into 1 ball.

Aromatic Powder.

Caraway, 6 oz.; pimento, 4 oz.; ginger, 2 oz.; licorice, 2 oz. Mix. Dose, 6 to 8 drachms.

Cooling and Diuretic Drink.

Dissolve 1 ounce of nitre in a pail of water.

Tonic Ball (Vegetable Tonic).

Peruvian bark, 1 ounce; opium, ½ drachm; ginger, 1½ drachms; oil of caraway, 20 drops. Treacle to form a ball.

Diuretic Alterative Balls.

Dried common soda, 1 oz.; castile soap, 6 drs.; resin, 2 oz.; licorice powder, ½ oz.; Barbadoes tar, to form six balls. One daily.

Laxative Alterative Balls.

Aloes, 4 oz.; soft soap, 4 oz.; common moss, 2½ oz. Mix. Dose, one ounce.

Balls for Appetite.

Equal weights of assafœtida, saffron, bay berries, and aloes, made into a mass with extract of gentian. Dose, 1 oz.

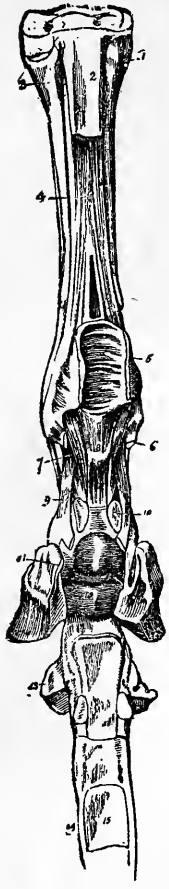

Fig. 900.— Showing the Theca, or channel, of the perforans tendon at the ankle and heel. (This cut belongs to article on Sprain of the Back Tendons, on page 957.)

Anodyne Ball.

Opium, ½ drachm to 1 drachm; camphor, 1 drachm; anise seed, ½ oz.; soft extract of licorice.

Cordial Balls.

Ginger and gentian, equal parts; treacle to form a mass. Dose, 1 oz. to 1½ oz.

Ginger and caraway, each, 4 lbs.; gentian, 1 lb.; palm-oil, 4½ lbs. Beat together. Dose, 1 to 1½ oz.

Mixed Balls, Cordial Astringent Balls.

Catechu, 1 drachm; opium, 10 grains. To wash horses before or after a journey.

Diuretic Balls.

Resin, soap, and nitre, of each, equal parts; beaten together into a mass. Dose, 1 oz. to 1½ oz.

White soap, 8 oz.; nitre, 3 oz.; resin, 3 oz.; camphor, 3 drachms; oil of juniper, 3 drachms. For 6 balls, one every morning or every other morning.

Tonic Diuretic Ball.

Gentian, 1 drachm; ginger, ½ drachm; sulphate of iron, 2 drachms; nitre, ½ oz.; resin, ½ oz. Mix with molasses.

Fever Balls.

Emetic tartar, ½ drachm; camphor, ½ drachm; nitre, 2 drachms; ginger, 3 drachms. Mix, and make into balls.

For Diabetes.

Catechu, ½ oz.; alum, ½ drachm; sugar of lead, 10 grains; with conserve of roses to form a ball.

Anodyne Drenches.

Opium, 1 drachm, dissolved in warm water, ½ pint; add 1 quart of starch gruel.

Mix tincture of opium, 1 oz. with sweet spirits of nitre, 1½ oz.; essence peppermint, 1 drachm, and water, 1 pint.

To Cure Collar or Saddle Galls.

Fill a fruit can about a third full with litharge, or 1⅞. Fill balance with lard, and mix thoroughly. The litharge should be well prolonged. In twenty-four hours ready for use.

To Heal Cuts or Bruises.

A favorite remedy, by C. H. Smith, a practical livery man in Eureka Springs, Ark. Exceedingly good for saddle sores or galls.

2 oz. gum camphor; 6 oz. castile soap; 6 oz. spirits ammonia. Mix, and let stand until dissolved; then add 2 oz. sal ammoniac, 16 oz. spirits turpentine, 1 quart soft water.

Stimulating Liniment.

2 ounces aquæ ammonia; 4 drachms organum; 1½ ounces raw linseed oil.

HUMAN REMEDIES.

THE prescriptions here following, among which will be found several of great value, have been obtained at considerable expense and trouble. The great value with which my old book, The New System, is held, is chiefly owing to the recipes given in it, all of which will be found under the various heads in this. This appreciation has induced me to add the recipes here following. Those for headache, hydrophobia, tape-worm, etc., are specially valuable. These recipes are worth more than the cost of the book.

"CURE FOR TAPE-WORM.

"My symptoms while harboring a tape-worm were most noticeably a depression of mind, caused, I suppose, by weakness for which I could see no cause (not then knowing its existence). Had a good appetite—not at all inordinate, only I would have a desire to eat within two hours after a good meal. I grew weaker daily, it seemed to me; in fact, I was starving.

"*Cure.*—I bought about two quarts of pumpkin seeds, peeled them, pounded the meats fine in a mortar; took a teacup half full, added water to make it the consistency of a thick gruel, and ate it with my breakfast and dinner. The third dose brought the "varmint," though I persisted in taking three more doses, so as to be sure and get away the head and neck, which are about the size of a darning-needle. Unless that comes away, it will grow again. The dose above named will cause some pain, as a physic, but it is in no way dangerous. It is a poison only to the worms.

"SAMUEL B. MORSE,
"6th Aud. Office, Treas. Dep't.,
"Washington, D. C."

See top page 911, where another modification of the remedy is given, as used by a well known veterinary surgeon of New York City. Would particularly call attention to how to use it, especially so far as the fasting before taking it; next the taking of a brisk cathartic afterwards.

CURE FOR HEADACHE.

Ferocyannate of quinine, 60 grains; valerinate zinc, 20 grains; solid extract hyoscyamius, 20 grains. Make into 20 pills. Take one pill three times a day, before meals, for three days; then stop three days, unless it is about time for the return of the headache;

in that case, keep right on with the pills. These pills are harmless, and are both tonic and nervine.

This recipe is from Dr. Johnson, Atlanta, Ga., who gave it to Mr. Wm. Andrus, and he to Grandine & Hinman, druggists in Battle Creek, Mich., his successors in business, who have used it among their friends and customers with universal success. It is undoubtedly the best remedy for headache known to the profession.

During a chance conversation with one of the above firm in relation to the prescriptions for tape-worm and hydrophobia, given in other pages of this book, he referred to this recipe as invaluable for cure of headache, and referred to a large number of cases he knew to have been cured by it. Assured of its value, with the hope of being able to help those so unfortunate as to be subject to sick-headache, I made a special request for a copy of it, which was kindly granted. As this prescription cannot be put up by small country druggists, we would advise having it put up by the above firm. They are perfect gentlemen, and stand very high for integrity. This is not an advertisement, and is mentioned for the special benefit of friends who may need the medicine. It will cost $1.50 to fill the prescription.

To Cure Fits.

Put as much valerian root, and the castor or wart from a horse's leg, which is to be cleaned and cut into small pieces, as will be digested in a pint of whisky. Dose—three teaspoonfuls a day, and repeated until a cure is effected. A son of Mr. Hoyer's, of Shelby, Niagara County, N. Y., twelve years old, was subject to fits terribly, being in a fit sometimes, Mr. Hoyer stated, for two hours. Dr. Failing, of Royalton, next town, obtained the above remedy in Canada, which cured the boy in six months. Mr. Henderson, hotel keeper of Otisco, N. Y., claimed to have been cured by this prescription, also three others met by the writer in Central New York.

Cure of Carbuncle.

Take a cow's horn, scrape off about a handful of fine shavings, and apply to the enlargement. Continue repeating until there is relief. This is regarded specific, and gives relief in two or three days.

Mr. McCombs, of Hot Springs, Ark., who gave it to me, referred to a number of bad cases cured. One especial case was that of a man who had a very bad carbuncle, of week's duration. He was recommended to use this. His doctor found it on, and took it off; but the patient had another poultice put on. The effect was so good, that the doctor, next time, said he might keep it on. The experiment was so marked a success that he adopted it as his method of treatment.

Sure Cure for Bite of Rattlesnake.

The leaves of boneset herb boiled down in milk to a strong decoction, which is to be given freely as a drink; also keep the bitten part well poulticed with the same, changing frequently until

all dangerous symptoms disappear. Edward Comfort, of Germantown, Pa., a Quaker, sixty years of age, of much intelligence and experience, gave me the above and the following statement in relation to this herb. He stated first that he knew by undoubted statements of neighbors and personally, of its being used in various cases with entire success, both on man and beast. A young woman living at Mahomeny Creek, Jeff. Co., Pa., was bitten by a snake in the morning. Her father rode 20 miles to Red Bank for a physician, but returning toward evening met a neighbor, Wm. Neil, who told him he knew how to cure her, and went home with him. Proceeding on a run across the meadow, gathering some boneset as he went along; and, to save time, as he neared the house he chewed some of the leaves in his mouth to a pulp, and the moment he reached the girl, put the mass, as a poultice, on the wound. He then immediately made a milk decoction, as first explained, and gave a spoonful at a time, as she was able to take it. At the time of his arrival, her tongue was so swollen as to protrude out of her mouth, and bleeding from the mouth and ears. He remained all night, frequently changing the poultice, and giving a few tablespoonfuls at a time. By morning she was able to close her mouth, and ceased bleeding at the nose and ears, and by evening was quite comfortable, and was soon entirely restored. Mr. C. also stated that the father of his aunt, Mr. Brady, extensively employed in surveying different counties in Pennsylvania, spending much time in the woods, related to him various cases where the above remedy had been applied with entire success.

For Cure of Diphtheria.

Given by Mrs. J. Ogden Dorcenous, the eminent chemist of New York City.

Lime-water and carbolic acid. Spray the throat with it once an hour.

To Stop Hair Falling Out.

The following has proved so valuable a remedy for preventing hair falling out, as well as growing in new hair, that it is given a place here:—

Fill a bottle with lobelia roots and stems, and cover well with good whisky, and let stand until digested; then strain off the liquor and add any scent desirable. Wet the hair, rubbing well into the scalp with the fingers once a day for a week or two, repeating afterward as may be found necessary.

Years ago the writer's hair was falling out rapidly; being noticed by a stranger, he advised the above dressing, saying his hair was falling out rapidly, and was not only stopped falling out, but had grown in thick by this remedy, and would warrant it to do

so in my case. It was immediately used as directed, with the most satisfactory results.

Years afterward his hair commenced falling out again; about what would be supposed an equivalent of the tincture of lobelia was used; a little castor oil was added, scented with bergamot, and used as a dressing; the effect seemed to be the same as before. The remedy has been given by the writer to a number of persons who used it with the same success.

To Take out Fire from a Burn.

Take equal portions lime-water and raw linseed oil. Good for burns and scalds. Bathe the parts liberally with the liniment.

This was given by W. Mansfield, of W. Roxbury, Vt., and used by him for many years in his family; claimed it to be one of the best remedies ever used for these purposes. In the proportion of ⅔ lime-water and ⅓ linseed oil will cure the poisoning by ivy and dogwood. Wet a cloth and lay on the part, and keep constantly wet till well.

A lady who had had much experience with these poisons, says this is the only thing that seems to take out the poison.

Cure of Sciatic Rheumatism.

A case of sciatic rheumatism of two years' standing, cured by taking decoction of poke berries, prepared as follows:—

Put a pint of the berries in a quart of whisky. After standing until fully digested, dose, one tablespoonful four times in twenty-four hours, or six hours apart. The case was very severe, resisting all regular treatment, and causing great suffering. Was cured in a few weeks.

Given by Rev. Mr. Button, of Evansville, Ill. He obtained it from the man who was cured.

Itch Ointment.

1 oz. red precipitate; 1 oz. spirits of turpentine; 2 oz. Burgundy pitch; ½ lb. fresh butter. Melt the butter and pitch, and add the other ingredients, stirring until cold.

Inflammation of Kidneys and Bladder.

This was given by a leading physician as his favorite remedy.

Fluid extract, colchicum and digitallis, ¼ ounce each. Dose, 10 drops in a tablespoonful of water every morning.

To Open the Bowels.

Given by Isaac Price, of Schuylkill, Chester Co., Pa.

Take coarse cornmeal enough to make a pint, or pint and a half. Boil it about half, or parboil, to which add the size of a hick-

ory nut of fresh made butter, or butter without salt. If agreeable, eat with it plenty of molasses. Make a meal of this, and repeat if necessary.

For Catarrh, Sore Throat, etc.

2 oz. borax; 2 oz. burnt alum; 4 oz. camphor; 4 oz. Talcum. Use as snuff three or four times a day. Also good for headache and neuralgia. Used with great success in sore throat and diphtheria; taken as a gargle. Used by James Thompson, Chicago, for 20 years, for cure of catarrh and cold in head.

For Control of Nervous Irritability, Want of Sleep, etc.

Prescribed by Dr. Jewell, of Chicago.

19 grains sulphate of morphia; 1 grain atrophia (belladonna); 180 grains sugar of milk. To be put in a mortar, and worked thoroughly one hour. Dose for adult, 4 grains before going to bed, or repeated when necessary once in four hours.

Eye Wash.

A remedy of great value for inflammation of the eyes or sores of any kind.

Crotus martes and white vitriol, equal parts; dissolve in a half-pint of snow-water or pure soft-water. Dissolve thoroughly, and when settled, pour off and add half as much more water. If too sensitive, or much inflammation, reduce.

This has cured fever sores when all other treatment failed. Alzerah Williams, Mrs. Waite of Jamestown, N. Y., and John Woodford of West Hickory, Pa., were cured by it.

To Cure Boils.

Two parts cream tartar, one part sulphur, one pint whisky. (About four cents' worth of each of the two.)

Take one tablespoonful three mornings; then skip three mornings, and so on, for nine mornings. Obtained from an old man, and claimed to be an infallible cure.

Asthma.—How Cured.

Take smart-weed, carefully dried. Fill an earthen bowl with smart-weed, pour in hot water, and cover until steeped. Take half a glass three times a day until cured. Given by James Garcelon of Lewiston, Me. Mr. Garcelon for two years could not sleep, except by sitting in a chair. Relief was immediate, and a cure was effected in a year.

Another Remedy.—A lady of intelligence in Western New York told the writer that her uncle was cured of asthma by taking a teaspoonful of salt in half a tumbler of water before going to bed at night, and in the morning; that he sat up to sleep for years; that he had taken the salt and water for a year. He was entirely relieved of the asthma, but he kept taking the salt and water.

How to Give Relief in Obstinate Constipation.

Cyrus W. King, of Brunswick, Me., was relieved by this remedy after taking pills, etc., and failing to get a passage of the bowels for seventeen days. Put a tablespoonful of coarse Indian meal into a cup, and wet thoroughly with common molasses, and take it all. An old lady who happened to hear of the case, said she could relieve the man in a few hours, and advised this. It was taken at night, and there was perfect relief by morning.

To Cure Colic.

Take at once a tumblerful of hot molasses. A sailor who was delirious from colic, and nearly dead from it, was relieved in five minutes. Calling my attention to it, and claiming it would cure every case, I was induced to make a note of it. The sailor said he took cold molasses with the same effect.

To Cure a Fever-Sore.

Take 3 ounces blue vitriol and 3 ounces gunpowder. Boil in a quart of soft water until thoroughly dissolved, and reduced to one-half the quantity. Pour on to the sore while hot as can be borne.

Steven Johnson of Gouverneur, N. Y., was cured of a fever-sore on his arm, of the worst character, of a year's standing. Doctors said he must lose his arm—his own words. There was necrosis of the bones of the arm; sores in three places; was cured by one application. Mr. Olmstead, of Oxbow, N. Y., had a bad sore below the knee; went on crutches for six months; was cured with one application. Several other cases were reported of an equally remarkable character.

To Cure an Indolent Ulcer.

A gentleman who had a fever-sore on his leg for seventeen years, had spent five thousand dollars in trying to get the sore cured, and had no hope of having it healed, was cured in three months by the following remedy:—

Take the green scum that gathers on the water in the frog ponds in spring and summer; boil over a slow fire; then add fresh butter to the consistence of an ointment. Dress the sore with it once a day. The man claimed to have given it to others who were afflicted with obstinate ulcers, and that it had made perfect cures, and wished, from humanity to others so afflicted, that I would give it an insertion in my book.

For Weak Back, Rheumatism, and Crick in the Back.

British oil, 1 oz.; oil of spike, 1 oz.; origanum, 1 oz.; camphor, 1 oz.; alcohol, 1 pint. Put the British oil and camphor into the alcohol first; shake well. T. H. Brown, of Madrid, N. Y., was cured of rheumatism in the leg with this. His mother had a crick in the back; was entirely disabled. A few applications cured her. Accounts of its valuable effects in the cure of other cases were reported.

Remarkable Cure.

The following is a case of remarkable cure of bruise of thigh, from the use of hot salt.

H. D. Johnson, of Pottsdam, St. Lawrence Co., N. Y., fell from a building, twelve feet, upon a pile of wood, injuring him seriously in different parts of the body—the thigh very seriously bruised, causing him to faint away. He had a stiff leg for a month, the part swollen from the hip to the foot to twice its size, was treated with cold water by advice of three physicians. The limb was entirely stiff and disabled. As a matter of experiment he bound on a poultice of hot salt about an inch thick before going to bed. Next morning he could move and bend his leg, the swelling was all gone down, and he was perfectly cured.

The simple facts, as stated above, were given to the writer six years after the injury of Mr. Johnson.

For Rheumatism, Lame Back, and Difficulty of the Kidneys (in man).

Digitallis, calcium, and aconite, equal parts. Take 10 to 15 drops in water, twice a day. This is a favorite prescription that is valued highly,—worth, so claimed, many times the cost of this work.

For Infant Colic, or Restlessness.

Homeopathic pellets, medicated with the third dilution of chamamilla. Also of great benefit in derangements of the bowels, during teething. Dose from 2 to 6 pellets.

The above has been recommended so highly, and I am made to believe is so valuable a remedy, in addition to being entirely harmless, that I am induced to include it for the benefit of families.

To Cure Insomnia (Sleeplessness). Also Good for Cold and Biliousness.

First get into a bath of a temperature of 98°, into which had been put 1 pound sal soda and 4 ounces aquæ ammonia. The head should be kept wet with cold water. Gradually increase the temperature as high as can be borne, or to 110° to 115°, remaining in from 10 to 15 minutes. When there is nervousness, itching of the skin, causing disturbance and irritation after the bath, take 1 part aquæ ammonia to 4 parts warm water, and apply to the skin with a sponge over the entire body.

Prescribed by an eminent physician, of New York City; given me by a gentleman well read in medicine, who used it with great success. Referred to a number of cases entirely relieved and cured by a few baths. The attention of physicians is particularly directed to the value of the above.

The bath should be taken before going to bed.

Psoriasis and Eczema. (Particularly Psoriasis.)

Arsenite soda, 5 grains; powdered extract nux vomica, 4 grains. Make 100 pills; take one after each meal. To insure a cure, should be used from 1 to 6 months.

2. Sulphur and cream tartar, each, 1 oz.; calcined magnesia, ½ oz; powdered sugar milk, 1 oz.; powdered anise seed, 3 drachms. Mix. Dose: 1 teaspoonful in water night and morning.

3. Tar Ointment.—Pure tar, and beef suet, equal parts. Mix the tar with the suet, previously melted with a moderate heat. And having strained the mixture through muslin, stir it constantly while cooling. Apply 2 or 3 times daily, rubbing in thoroughly.

4. Particularly for psoriasis. Caustic potash, 2 drachms; oil tar, ½ oz. Mix. Apply, externally, one part of the mixture to 4 parts rain-water. After using for 2 weeks, it may be used 1 part to 2 parts rain-water.

A gentleman who had suffered terribly from psoriasis for years, though under treatment almost constantly by specialists at great expense, was given the above prescription by an eminent specialist, of New York City, which cured him in three months. Knows of its curing a number of bad cases to whom he gave the prescription. Regards it priceless in value. It is included here with the hope of its helping persons so affected. The treatment given should be regularly followed.

Eye Wash.

Take three hen's eggs and break them into a quart of clear cold rain-water; stir until a thorough mixture is effected; boil over a slow fire, stirring every few minutes; add half an ounce of sulphate of zinc (white vitriol); continue the boiling a short time, and the compound is ready for use. In this preparation a solid substance, or curd, is precipitated or thrown down, and a liquid solution rests upon the top. This is the best wash for sore eyes of either man or beast that was ever made. The curd applied to the inflamed eye at night will draw the fever and soreness nearly all out by morning. After two or three days the water should be strained from the curd, and put into a bottle for future use. This wash is invaluable. When applied to the human eye, it should be diluted.

A gentleman who had a copy of my old edition, having this remedy in it, informed me that he was offered $10 for the book on account of the value of this recipe, having used it in his neighborhood with great success, and that he would not sell it at any price.

ADDENDA.

SPECIAL NOTICE TO FRIENDS AND INQUIRERS.

In consequence of many inquiries from persons who desire instructions from me, asking when and where I would next teach a class, etc., I would state that for at least six months I desire to give myself entire rest. I will not, on any conditions, teach classes as done by me heretofore. In the first place, it is entirely unnecessary, as all the instruction I could give will be found in this book more clearly and fully explained than I could give to a class in a few hours' time. In addition, the condition of my health will not admit my being exposed again to the strain and excitement of this kind of work.

When suitable or specially interesting subjects are available, I will, as a means of amusement to myself and interest to friends, make experiments to show the effects of my treatment. These lectures, or test experiments, will, in all cases, be given without charge, all subscribers to the book being admitted.

Gentlemen writing to me on any business, please be as brief and explicit as possible. In describing vicious horses of any character, give age, color, size, the kind of habit and action, long or short hair, kind of eye and head, etc. In making experiments, to be interesting it is necessary to have at least three cases, opposite in temperament and character, to show effects upon different kinds of character. I desire, so far as it is possible for me to do, to give leading horsemen an opportunity of witnessing test experiments made by the system of treatment given in this book. But I must, in all cases, be free to make such experiments in my own way, and to insure this, will make them on the condition of not taking pay.

D. MAGNER,

May 22, 1884. Battle Creek, Mich.

Cribbing.

The following was omitted in its proper place on page 319. As it will, however, be found in the General Index, it will not make much difference:—

If regular treatment advised fails, try saturating the manger, neck-yoke, and straps, if inclined to bite them, with kerosene oil. Rubbing the parts bitten upon with strong fly blister, may next be tried; or get cayenne or red pepper pods, boil down to a strong decoction, and wash the parts the horse may be induced to bite upon thoroughly with the solution. To be repeated at least once a week, for a month or more. The object is to make the lips and mouth so sore as to prevent the inclination to bite. This method will often work very satisfactorily; but, like the treatment first advised, must be done thoroughly to be effective. Covering the parts with sheep skin will seldom do any good.

W. D. Gross, of Kutztown, Pa., advertises a device for the cure of cribbing, for which he claims much. It is simply a thin plate of metal placed over the upper front teeth and fastened at each end by small bolts. This will, of course, make the gums sore, if pressed upon to any extent, and will undoubtedly work well; but it seems objectionable, on account of the annoyance such a plate must cause a sensitive horse, and the method of fastening it to the teeth. Cribbing can in all cases be stopped by buckling a wide, flexible strap, moderately tight, around the neck. It should be from 3 to $3\frac{1}{2}$ inches wide. A narrow strap will not work well.

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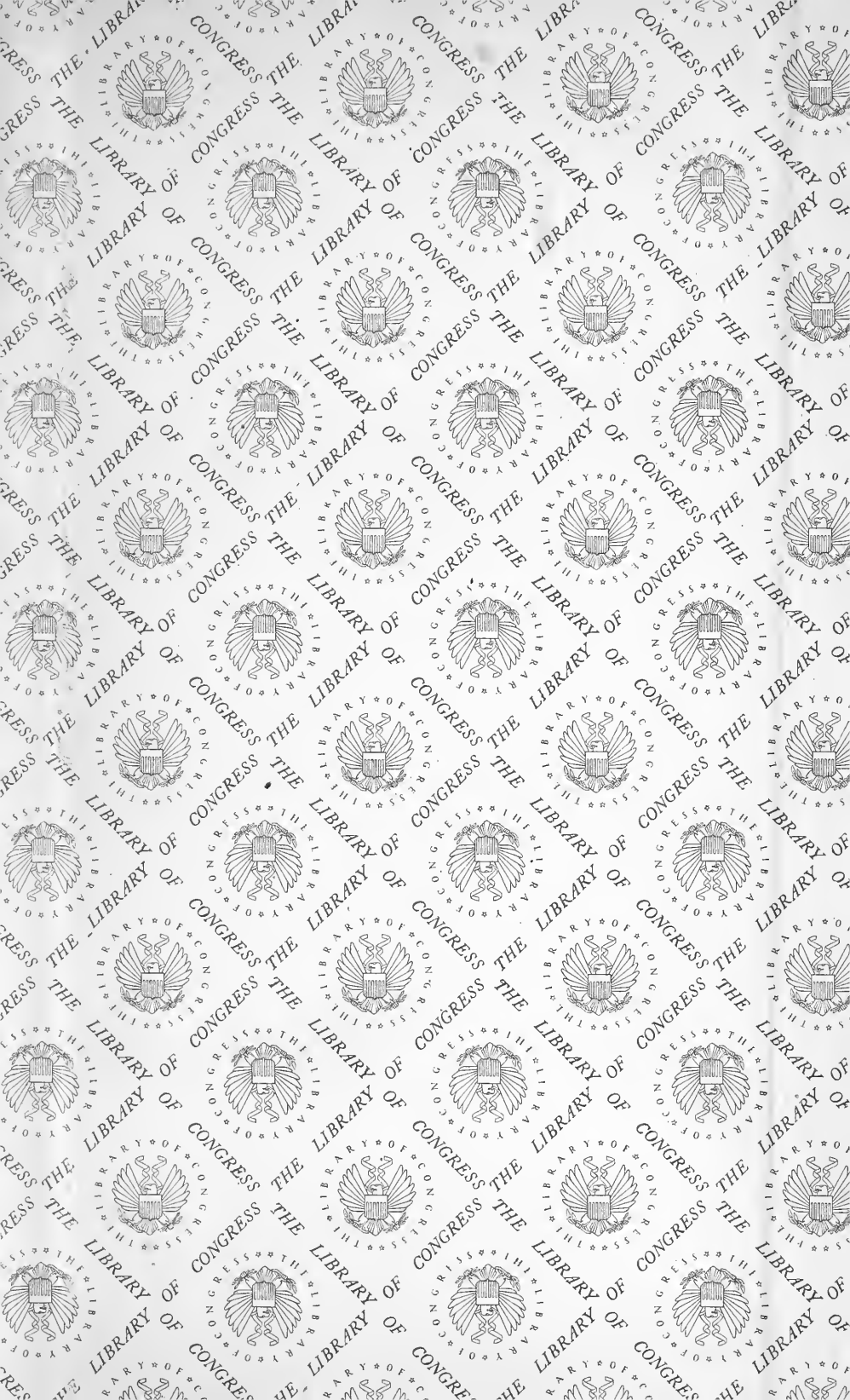
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